TR-105

TECHNICAL REPORT

OPERATION DEEP FREEZE 61

1960—1961

MARINE GEOPHYSICAL INVESTIGATIONS

Marine Surveys Division

JUNE 1962

U. S. NAVY HYDROGRAPHIC OFFICE
WASHINGTON 25, D. C.

ABSTRACT

Results of marine geophysical research during the U.S. Navy operations in support of DEEP FREEZE 61, 1960-1961, are presented. Observations in areas of the Pacific Antarctic, Antarctic Convergence, and South Atlantic were made from aboard four icebreakers: USS STATEN ISLAND (AGB-5), USS EDISTO (AGB-2), USS GLACIER (AGB-4), and USCGC EASTWIND (WAGB-279). Ships' tracks to, in, and from the Antarctic are given.

U. S. Navy Hydrographic Office personnel recorded 94 oceanographic stations aboard STATEN ISLAND and EDISTO. STATEN ISLAND occupied 31 stations in the eastern Ross Sea (Cape Colbeck area), 43 in the Amundsen-Bellingshausen Seas area, and 5 just south of the Antarctic Convergence. Data from these stations included vertical distribution of observed temperatures, salinities, and dissolved oxygens. Profiles of the observed physical and chemical properties of the water in these areas are presented. EDISTO occupied 15 stations in the western Ross Sea along the Victoria Land Coast in support of an ice prediction program begun on DEEP FREEZE 60. Vertical temperatures and salinities were observed. Densities, dynamic heights, and sound velocities were calculated by electronic computer for all stations.

Water types in the Pacific-Antarctic are discussed. These are identified in the areas of the eastern Ross Sea, Amundsen Sea, and Bellingshausen Sea. A representative station was selected from each area and the physical and chemical properties plotted for comparison.

Dynamic topography charts are presented for the eastern Ross Sea and Amundsen Sea areas. The 200 and 2500 decibar levels were selected as reference levels in the eastern Ross Sea and Amundsen Sea, respectively.

A section just south of the Antarctic Convergence is included with a profile of physical and chemical properties constructed from five oceanographic stations occupied in this area. The vertical structure of the southernmost station in this profile and those in the Amundsen and Ross Seas shows the vast expanse of the Circumpolar Water.

Concentrated bathymetric profiles were recorded in the eastern Ross Sea and three across the South Sandwich Trench with an AN/UQN-1B echo sounder. A discussion and profiles of the data collected across the South Sandwich Trench are included in this report.

The program of geomagnetic measurements aboard STATEN ISLAND was the first extensive shipborne investigation of the earth's magnetic field made in Antarctic waters by the United States. Approximately 11,500 track miles were recorded south of New Zealand. Total intensity data and comparison of magnetic and bathymetric data are presented in several profiles.

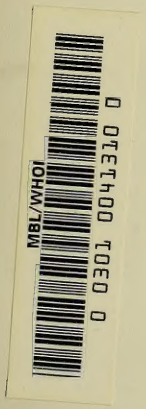
Aerial ice reconnaissance and surface ice observations from ships are presented.

A summary and field analysis of 71 bottom sediment samples collected aboard STATEN ISLAND are presented. All samples were transferred to Florida State University for laboratory analysis and publication of resulting data.

FOREWORD

DEEP FREEZE 61 was the seventh consecutive United States expedition in support of Antarctic research. Personnel of the U. S. Navy Hydrographic Office, supported by the National Science Foundation, conducted marine geophysical research from several icebreakers of TASK FORCE 43. Oceanographic studies were made in Ross, Amundsen, and Bellingshausen Seas and in the area of the Antarctic Convergence. Geomagnetic measurements were obtained along USS STATEN ISLAND track and Bathymetric profiles were recorded across the South Sandwich Trench. The analyses and tabulation of data collected are presented in this report.

E. C. STEPHAN
Rear Admiral, U. S. Navy
Hydrographer



CONTENTS

CONTENTS (Cont'd)

APPENDIXES

FIGURES

FIGURES (Cont'd)

FIGURES (Cont'd)

FIGURES (Cont'd)

FIGURES (Cont'd)

FIGURES (Cont'd)

TABLES

I. INTRODUCTION

A. Purpose

Operation DEEP FREEZE 61 (1960-1961) was a continuation of United States support of scientific endeavors in the Antarctic; it was the seventh consecutive year of U. S. Navy Hydrographic Office participation in marine geophysical research in this area. The National Science Foundation supported the scientific effort, the results of which are presented in this report.

Research was conducted during ships' transits to and from the Antarctic and in the Ross Sea, Amundsen-Bellingshausen Seas, South Atlantic Ocean, and the region of the Antarctic Convergence.

B. Summary of Operations

Marine geophysical observations were conducted aboard USS STATEN ISLAND (AGB-5), USS EDISTO (AGB-2), and USS GLACIER (AGB-4). Bathythermograph (BT) soundings were made by USCGC EASTWIND (WAGB-279). Oceanographic stations were occupied by HMNZS ENDEAVOUR along Victoria Land Coast in cooperation with EDISTO.

Tracks made by the icebreakers during survey operations are shown in Figure 1, and locations of marine geophysical stations in the Ross Sea and Amundsen-Bellingshausen Seas, in Figure 2. Basic obervations at these stations consisted of vertical temperature measurements and collection of water, bottom, and biological samples. Also, geomagnetic and bathymetric measurements were made. While underway, between stations, and in transit from one area to another, continuous total intensity geomagnetic profiles and precision bathymetric soundings were recorded. In addition, BT lowerings and ice and meteorological observations were made. Table 1 summarizes these observations by ship.

BT lowerings with 900-foot instruments were scheduled on an hourly basis aboard the four icebreakers and on a 4-hour basis on other ships of the Task Force. Prints of the BT slides and the accompanying weather observations are on file at the National Oceanographic Data Center.

Bottom samples were collected with Phleger and Hydroplastic (PVC) corers. All samples obtained were transferred to the Department of Geology, Florida State University, Tallahassee, Florida, for analyses and publication of the resulting data. The pertinent field data of these samples are summarized in Appendix B.

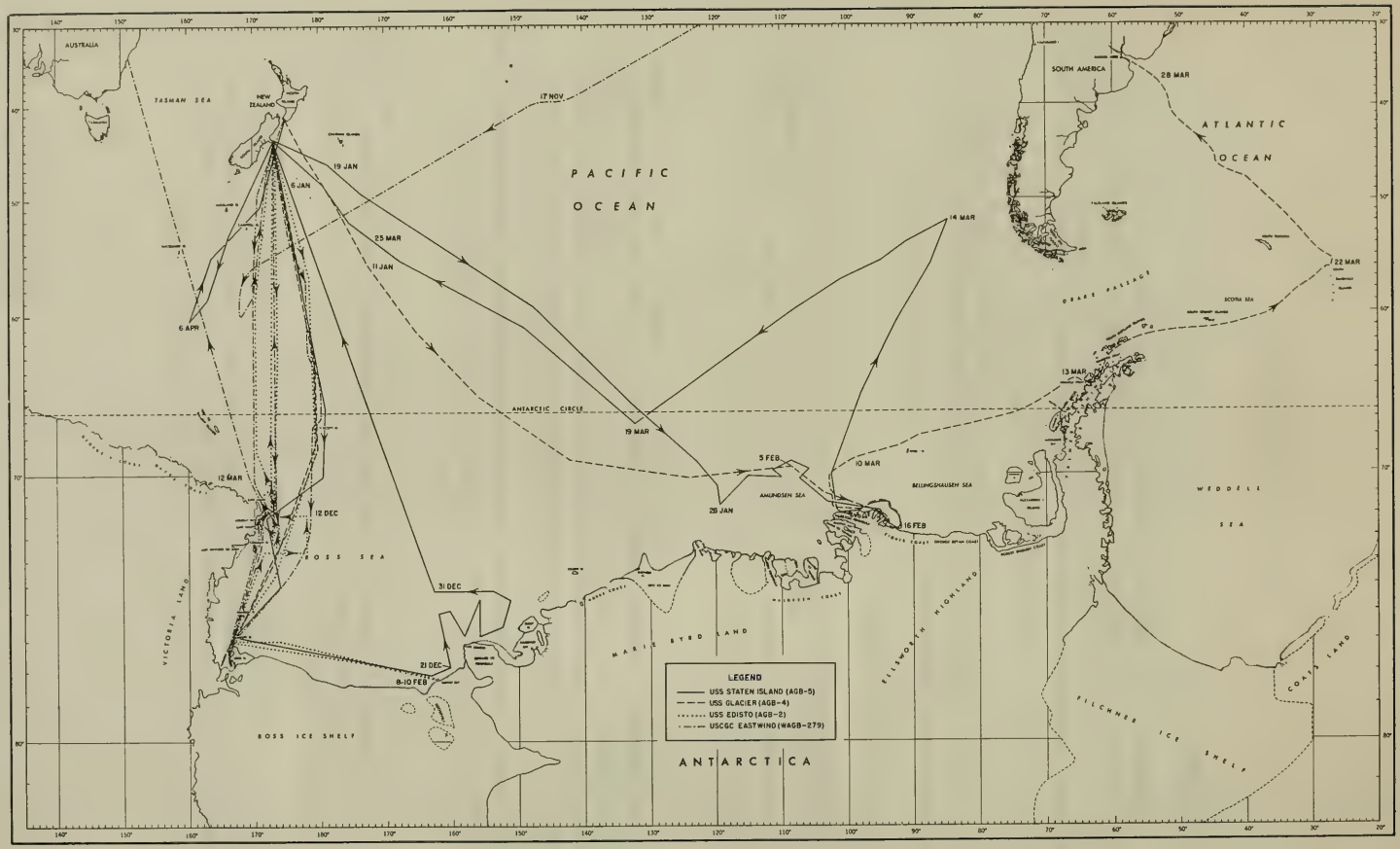


FIGURE 1. TRACKS OF ICEBREAKERS DURING DEEP FREEZE 61

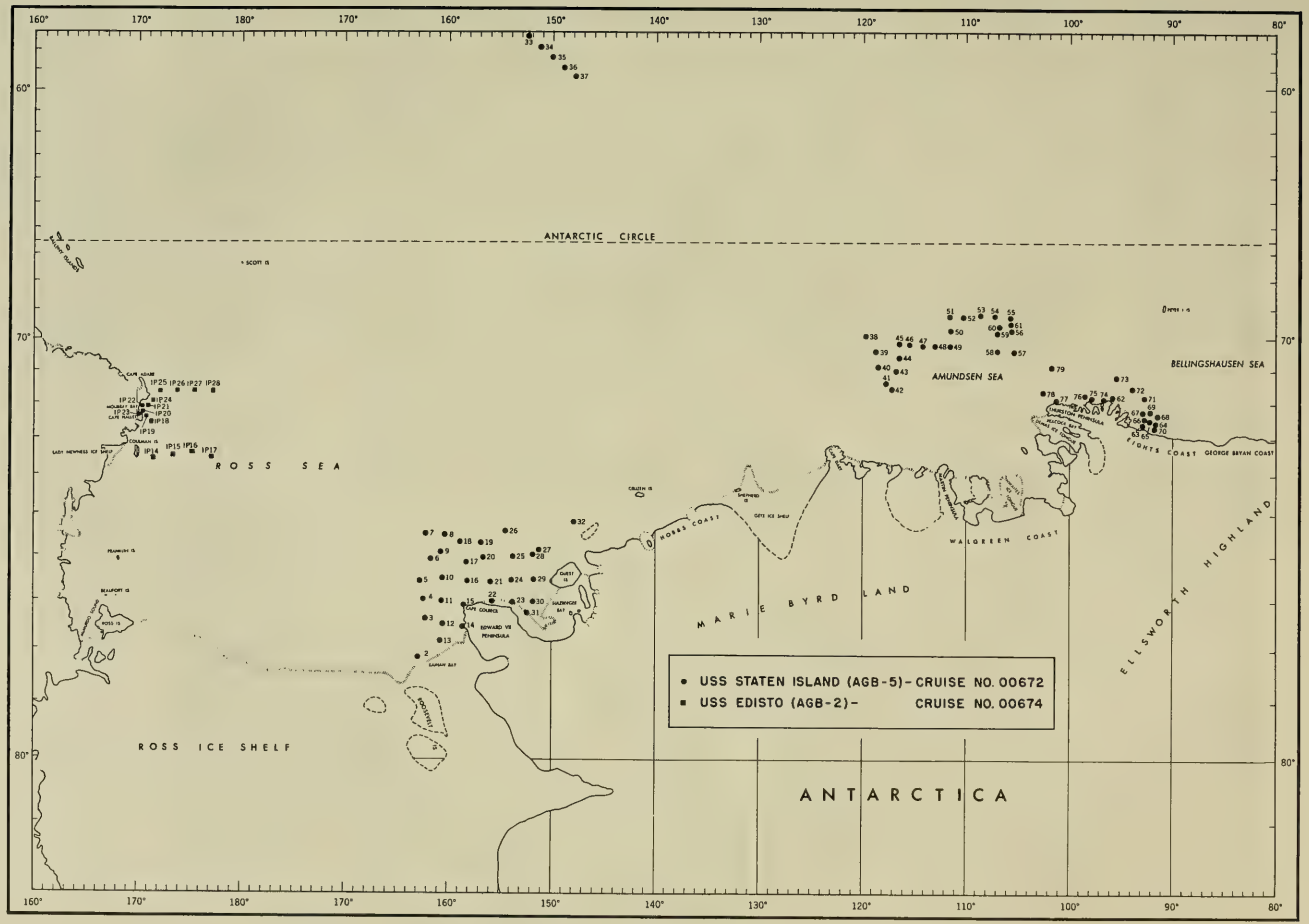


FIGURE 2. OCEANOGRAPHIC STATION LOCATIONS, DEEP FREEZE 61

TABLE 1. SUMMARY OF MARINE GEOPHYSICAL OBSERVATIONS - DEEP FREEZE 61

	STATEN ISLAND	GLACIER	EDISTO	EASTWIND
Oceanographic Stations	79	0	15	0
Oxygen Stations	79	0	0	0
BT's	875	959	600	929
Miles of Soundings	16,840	15,840	12,000	---
Miles of Geomagnetic Obs.	22,377	0	0	0
Miles of Continuous Temperature Obs.	9,700	0	0	0
Sea and Swell Obs.	190	----	----	---
Water Samples for Other Activities	110	0	0	0
Plankton Tows	17	0	0	0
Dredge Hauls	5	1	0	0
Temporal Geomagnetic Obs.	82	0	0	0
Miles of Mammal Obs.	14,254	0	0	0
Core Samples	71	0	0	0
Miles of Ice Reconnaissance	4,975	----	----	540
Surface Water Samples	75	0	0	0

Ice observations were made by a team of five observers assigned for aerial ice reconnaissance by the U. S. Navy Hydrographic Office to the Staff of Commander, Naval Support Forces, Antarctica. In addition, ice observations were made aboard all icebreakers by BT teams, aerographers, and quartermasters.

Meteorological and sea and swell observations were made at intervals of 1 to 3 hours by aerographers assigned to each icebreaker. These data were recorded on standard WBAN forms and forwarded to the National Weather Records Center, Asheville, North Carolina. Surface weather observations also were taken during Nansen cast (Appendix A) and BT lowerings.

Continuous underway soundings by echo sounders were made by all ships. Data taken by STATEN ISLAND have been incorporated into H. O. Charts 6637 (3rd Ed., 14 August 1961), 6633 (2nd Ed., 4 August 1961), and 6617 (1st Ed., 14 August 1961). The first chart is for the area in the vicinity of Cape Colbeck, the latter are for Thurston Island (formerly believed to be a peninsula) area and Eights Coast. All three charts are on a 1:500,000 scale.

Continuous air and sea temperature observations with resistance bulb thermometers were recorded on a 4-channel recorder. These data were taken by STATEN ISLAND enroute San Diego to Portland, Australia; and in the area of the Antarctic Convergence, enroute the Amundsen Sea. The records are on file in the U. S. Navy Hydrographic Office.

C. General Observational Techniques

Nansen bottles, with reversing thermometers attached, were used to observe temperatures and to collect water samples for salinity and dissolved oxygen determinations. The bottles were placed at international standard depths, with additional bottles in the upper layers, where maximum temperature changes occurred, and near the bottom.

Data reported were evaluated and coded for processing by an IBM 7070 computer. Machine computations provided temperature, salinity, and dissolved oxygen interpolation at standard depths, and calculations of sigma-t, anomaly of dynamic depth, and sound velocity[1]. Listings of these data are given in Appendix A.

1. Temperatures

Paired reversing thermometers were used to observe temperatures, and unprotected reversing thermometers in conjunction with observed wire angles were used to determine sample depths. Each unprotected thermometer was paired with a protected thermometer. When paired protected thermometers differed by 0.06°C, or more, the reading from the thermometer considered most reliable, based on its previous history record, was used. The mean maximum temperature difference between paired protected thermometers for all stations was 0.04°C. All reported temperatures are considered accurate to within plus or minus 0.02°C, unless marked doubtful.

2. Salinities

Salinities were determined aboard ship by a salinometer. The salinities from the Cape Colbeck area were determined prior to 5 January 1961; those salinities for the remaining stations were analyzed prior to 28 March. Each sample was subjected to two determinations; if the difference equaled or exceeded 0.01‰, a third

[1] KUWAHARA, Susumu, Velocity of sound in sea water and calculation of the velocity for use in sonic sounding, Hydr. Rev., v. 16, no. 2, pp. 123-140, 1939.

determination was made. Salinities are considered correct to within plus or minus 0.01‰.

3. Dissolved Oxygen

Dissolved oxygen determinations were by a modified Winkler method. Each sample was subjected to duplicate titrations against sodium thiosulfate. If the difference in amount of sodium thiosulfate used exceeded 0.05 ml/l a third determination was made. Dissolved oxygen determinations are considered to be accurate to within plus or minus 0.03 ml/l. The only exception to this was on four of the Convergence stations; on stations 33 through 36, where oxygen values were within plus or minus 0.05 ml/l. All oxygen analyses were completed within four hours after a sample was taken.

4. Magnetic Total Intensity

A nuclear resonance total intensity magnetometer, with the sensing unit towed 500 feet astern, was used to record total intensity. Data measurements were recorded once every two seconds of time on a strip-chart recorder. Total intensity data records were scaled and converted to values in gamma (1 gamma equals 10^{-5} oersted).

Measurements were made while hove-to at each oceanographic station by lowering the sensing unit to a depth of about 400 feet; data recording and processing were similar to the procedures for underway observations.

D. Methods of Data Presentation

1. Profiles and Cross Sections

Selected north-south and west-east cross sections of observed characteristics are presented for all areas surveyed except the Convergence area, where only one line of stations was taken. These characteristics include temperature, salinity, dissolved oxygen, and computed values of sigma-t.

Profiles of corrected regional magnetic gradient are shown along the ship's track. In addition, profiles of magnetic and bathymetric observations for crossings of the Pacific-Antarctic Ridge are presented.

2. Dynamic Topographies

Charts of dynamic topographies were prepared from temperature and salinity station data for the Cape Colbeck and Amundsen Sea areas. These charts depict

general circulation at various levels for these areas.

3. Temperature-Salinity Plots

Plots of temperature and salinity are given for stations in three areas: Cape Colbeck, Amundsen Sea, and Bellingshausen Sea. Four representative stations were selected to demonstrate vertical structure of physical properties.

E. Participating Personnel

The following scientific personnel from the U. S. Navy Hydrographic Office participated in the marine geophysical investigations during DEEP FREEZE 61:

Richard H. Evans	Oceanographer	USS STATEN ISLAND
J. C. France	Oceanographer	USS STATEN ISLAND USS EDISTO
Larry K. Lepley	Civil Engineer	USS STATEN ISLAND USS GLACIER
Donald D. Roberts	Geophysicist	USS STATEN ISLAND
James Q. Tierney	Oceanographer	USS STATEN ISLAND USS GLACIER
Lloyd W. Wilson	Oceanographer	USS STATEN ISLAND

F. Other DEEP FREEZE Publications

REPORT NO.	SHORT TITLE	SHIP(S)
H.O. 16331	Pre-DEEP FREEZE (1954-1955)	USS ATKA
TR-33	DEEP FREEZE I (1955-1956)	USS GLACIER USS EDISTO
TR-29	DEEP FREEZE II (1956-1957)	USS ATKA USS STATEN ISLAND USCGC NORTHWIND USS GLACIER

REPORT NO.	SHORT TITLE	SHIP(S)
TR-77*	DEEP FREEZE III (1957-1958)	USS ATKA USS GLACIER USS BURTON ISLAND USCGC WESTWIND
TR-78*	DEEP FREEZE IV (1958-1959)	USS GLACIER USCGC NORTHWIND USS EDISTO USS STATEN ISLAND
TR-82	DEEP FREEZE 60 (1959-1960)	USS ATKA USS BURTON ISLAND USCGC EASTWIND USS GLACIER

*Final report in preparation; however, data listings are available.

II. OCEANOGRAPHY

A. Water Types of the Pacific-Antarctic Area

The Pacific-Antarctic waters can be divided into two characteristic layers; Antarctic Upper Water, with low temperatures and salinities, and Antarctic Deep Water, with maximum temperatures and salinities and a gradual decrease of these properties to bottom. The boundary between these two layers is readily recognizable by a transition zone, where a rapid increase in temperature and salinity appears over a short-depth interval. According to Deacon, the Antarctic Upper Water can be described briefly as follows: A layer 100 to 250 meters thick is found all around the Antarctic seas. In winter, the water column is practically homogeneous. Temperature increases northward, from -1.9°C in the southern half of the zone, to between 0 and 1°C at the Convergence. In summer, a surface layer, Antarctic Surface Water, is formed, which has a higher temperature and lower salinity than Winter Water due to summer heating and ice melting.

The deeper layer of the Upper Water has been called Antarctic Winter Water by Mosby because this layer has nearly the same characteristics as the previous winter's Upper Water. Winter Water is significant in that it has a low temperature, a salinity with a lower gradient than exists in the transition layers above and below, and a salinity profile that often has a break in it. Below this layer of Antarctic Upper Water, a narrow transition layer with steep positive temperature and salinity gradients rapidly leads into Antarctic Deep Water.

Just south of the zone of strong negative surface temperature gradient, referred to as the Antarctic Convergence, one finds within the Deep Water three water types: Upper Deep Water, Lower Deep Water, and Bottom Water.

Upper Deep Water has a temperature of 2.0°C, or higher, and a salinity around 34.68‰. This Upper Deep Water is found south of the Convergence, just below the Winter Water. It is replaced 125 to 150 miles south of the Convergence by Lower Deep Water, which is undergoing transition to Antarctic Circumpolar Water.

Values of salinity and temperature necessary for water to be identified as Lower Deep Water are: temperatures greater than 0.5°C and a band of maximum salinity slightly greater than 34.7‰. These values are the same as those generally assigned to Antarctic Circumpolar Water. Therefore, for purposes of discussion, another restriction must be placed on Lower Deep Water, that of depth. In order for water to be classified as Lower Deep Water within the Antarctic Zone (south of the Convergence), its core of maximum salinity must be at a depth of about 2,000 meters.

With this added criterion, it is seen that Lower Deep Water is present but undergoing a transition south of the Convergence; the band of maximum salinity rises sharply from about 2,000 meters to 400 meters. Here then is where Lower Deep Water becomes Antarctic Circumpolar Water, in a zone of transition about 150 miles wide in a north-south direction.

In order to be identified as Bottom Water, the water must have a temperature less than 0.5°C and a salinity less than 34.7‰. Therefore, Bottom Water is not found in the Pacific-Antarctic area unless depth to bottom is of the order of 3,000 to 4,000 meters.

Thus, in the first 150 miles of the Pacific-Antarctic area, in a north to south direction, three separate water types may be found in Deep Water: Upper Deep Water, Lower Deep Water, which is undergoing transition, and Bottom Water. Beyond this point in a southerly direction there is no Upper Deep Water, and Lower Deep Water becomes the Antarctic Circumpolar Water which will be the only identifiable Deep Water if depths are not great enough for the existence of Bottom Water.

B. Eastern Ross Sea Area

1. General

Thirty-one oceanographic stations were occupied in the eastern Ross Sea from Edward VII Peninsula (Cape Colbeck) northward to approximately 75°S and eastward to Probable Island (E.D.). Of these, the twelve northernmost stations were in areas with sonic depths greater than 2,000 meters. The remaining stations were in areas with depths less than 1,000 meters except station 30, which was near the ice shelf in Sulzberger Bay, where the depth was 1,136 meters. Stations occupied within a radius of approximately 50 miles of Cape Colbeck had depths less than 500 meters, as did stations 28 and 29 near Guest Island to the east. Stations 2, 3, and 4, north of, and station 13, northeast of, Kainan Bay, were more than 500 meters deep. The 31 stations were occupied during the period 21 to 29 December 1960. A bottom contour chart is presented in Figure 3 based on bathymetric data collected during DEEP FREEZE 61.

Five cross sections were selected to illustrate vertical distribution of physical and chemical properties in the Eastern Ross Sea. These are presented as Figures 4 through 8. They consist of a west-east section of six deep stations (4,000-meter profile), a section over the continental shelf (1,000-meter profile), a section of three stations to the west of Cape Colbeck (1,000-meter profile), and two selected north-south sections representing the line of stations farthest west, south to Kainan Bay and those to the east into Sulzberger Bay. Bottom profiles are from the ship's echo sounding trace and are drawn with five soundings plotted between stations.

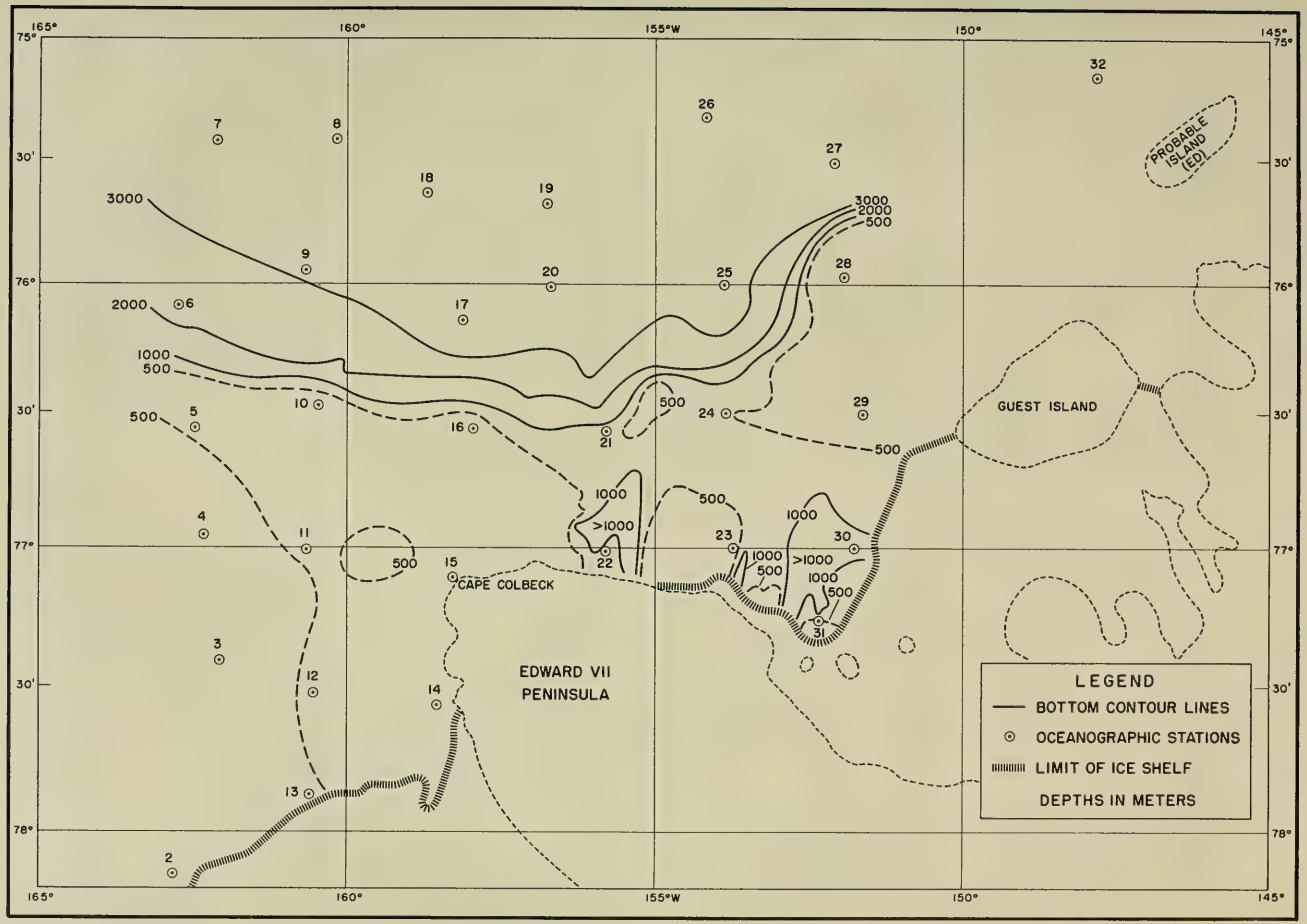


FIGURE 3. OCEANOGRAPHIC STATION LOCATIONS AND BOTTOM TOPOGRAPHY, EASTERN ROSS SEA AREA

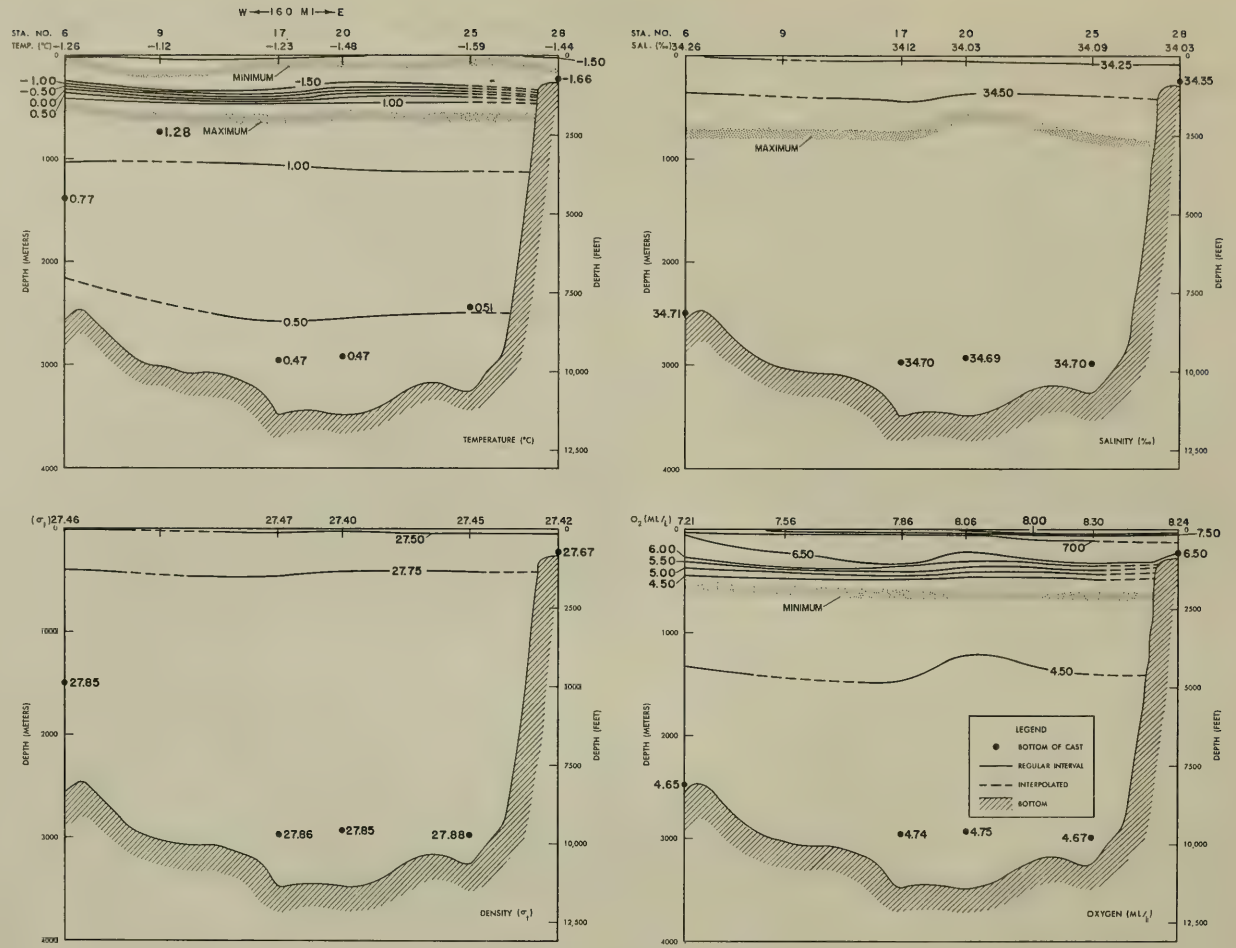


FIGURE 4. VERTICAL DISTRIBUTION OF TEMPERATURE, SALINITY, SIGMA-T, AND DISSOLVED OXYGEN, EASTERN ROSS SEA AREA (STATIONS 6, 9, 17, 20, 25, and 28)

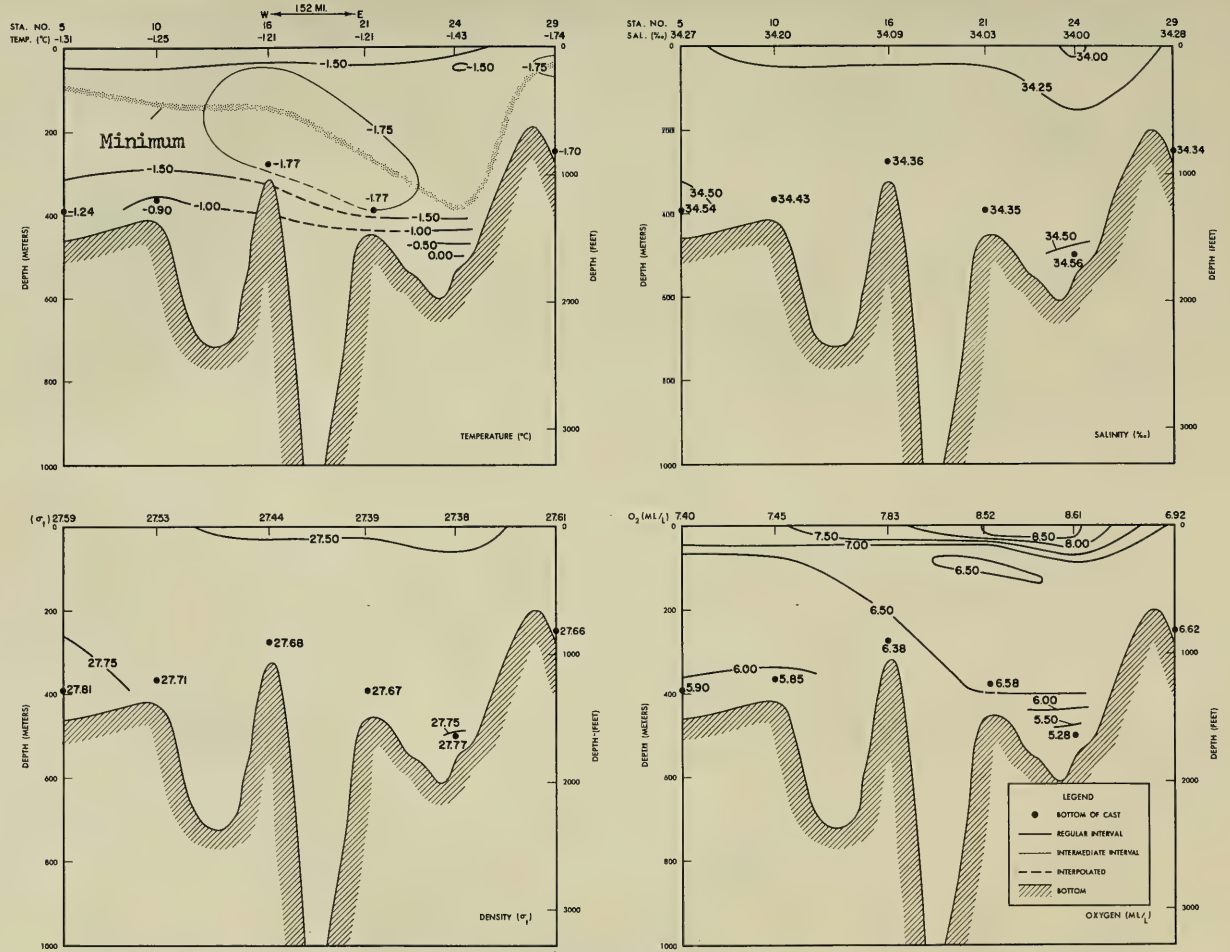


FIGURE 5. VERTICAL DISTRIBUTION OF TEMPERATURE, SALINITY, SIGMA-T, AND DISSOLVED OXYGEN, EASTERN ROSS SEA AREA (STATIONS 5, 10, 16, 21, 24, and 29)

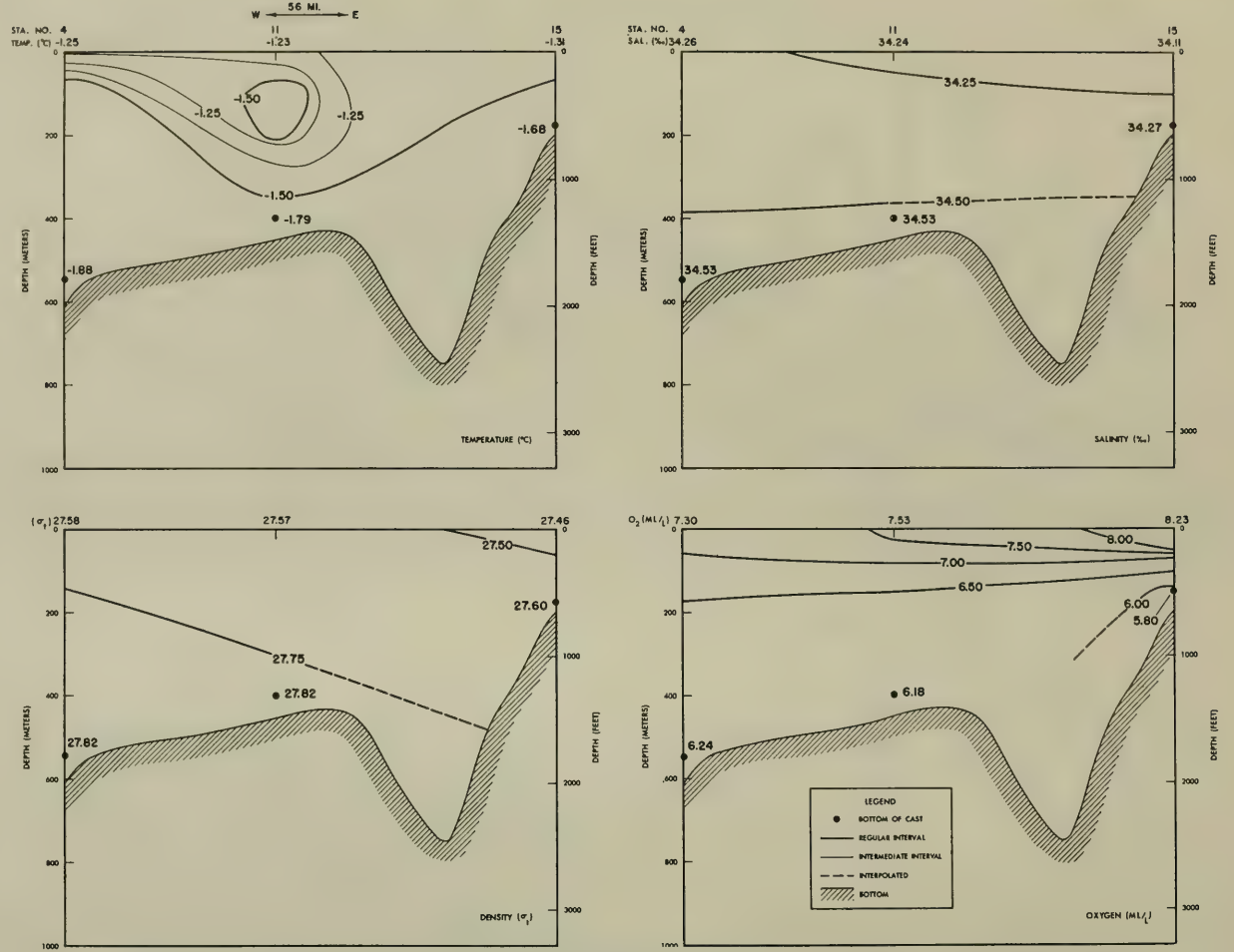


FIGURE 6. VERTICAL DISTRIBUTION OF TEMPERATURE, SALINITY, SIGMA-T, AND DISSOLVED OXYGEN, EASTERN ROSS SEA AREA (STATIONS 4, 11, and 15)

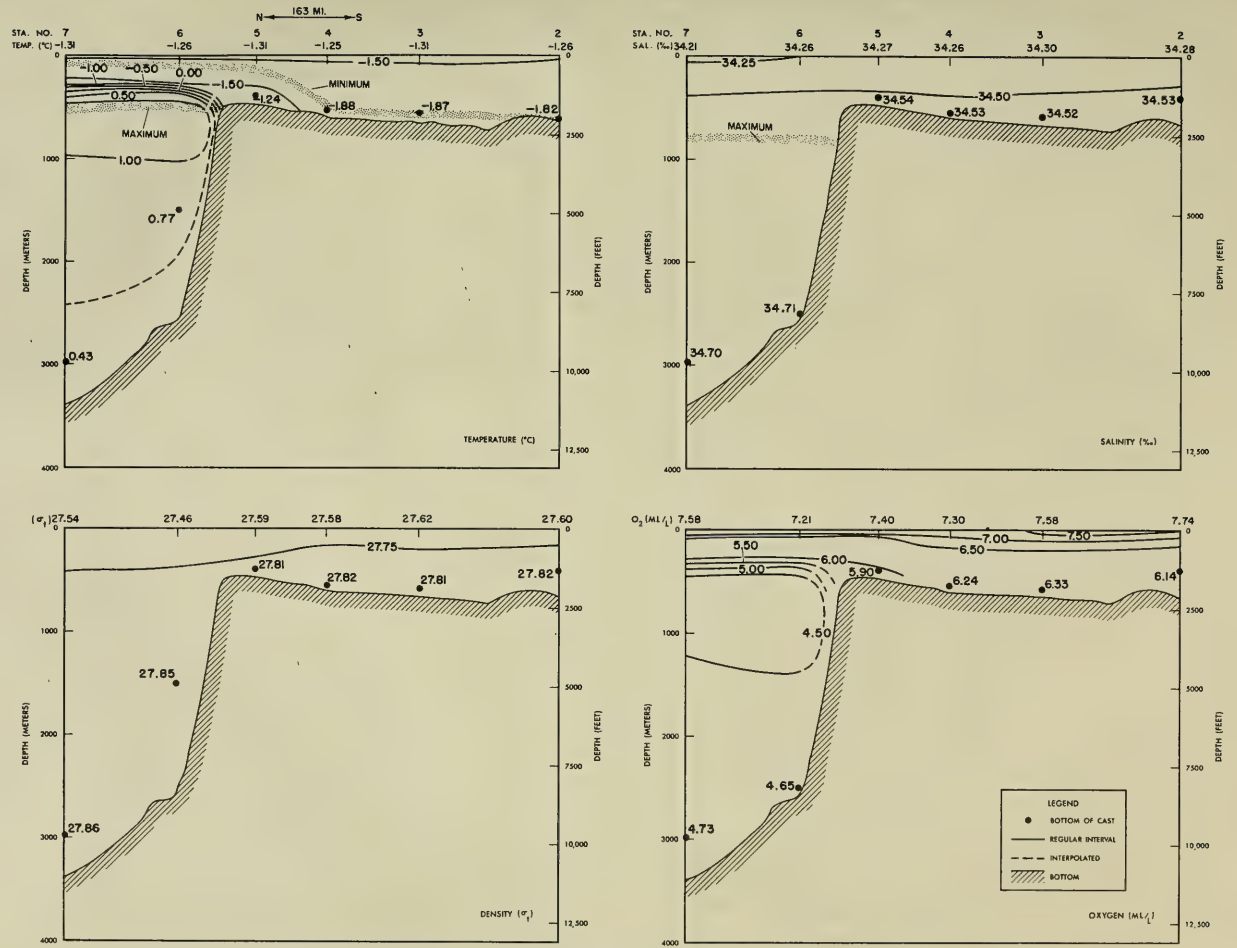


FIGURE 7. VERTICAL DISTRIBUTION OF TEMPERATURE, SALINITY, SIGMA-T, AND DISSOLVED OXYGEN, EASTERN ROSS SEA AREA (STATIONS 2 through 7)

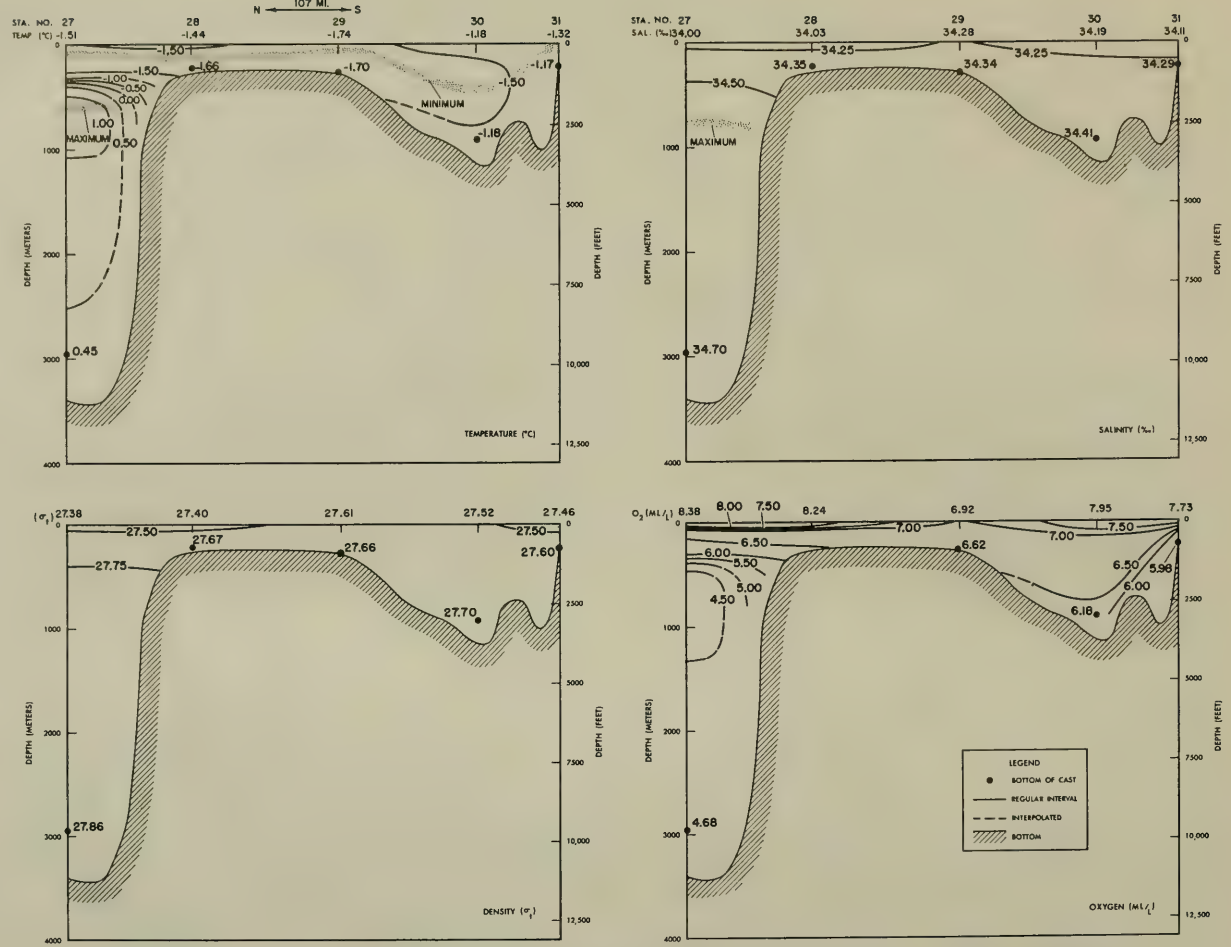


FIGURE 8. VERTICAL DISTRIBUTION OF TEMPERATURE, SALINITY, SIGMA-T, AND DISSOLVED OXYGEN, EASTERN ROSS SEA AREA (STATIONS 27 through 31)

2. Physical Properties

a. Temperature

Figure 4 shows the physical structure of the water column just seaward of the Antarctic continental shelf. The temperature section depicts the thin layer of slightly warmer Surface Water, the wider band of Winter Water with minimum temperatures, a narrow transition layer of rapid temperature increase just above the temperature maximum, and the broad expanse of Circumpolar Water that extends almost to the bottom. The transition layer separating Upper from Deep Water is found at quite uniform depths on all deep stations, as are the depths of maximum temperatures.

Bottom configuration of the shelf, illustrated in Figures 5 and 6, suggests north-south orientation of trenches extending seaward from the Antarctic continent in this area. Limited by station depths, only Upper Water was identified, except at station 24, where the transition layer was entered. If stations had been occupied between 10, 16, and 21, Circumpolar Water may have been found to exist in these trenches. In these two profiles, the existence of a small cold water cell centered at 125 meters at station 11 (<-1.50°C) and a larger one about 30 miles farther north extending eastwardly at stations 16 and 21 (<-1.75°C) were noted. This larger cell was located at depths from 150 to 300 meters. From the circulation pattern of the dynamic charts, these cells may be identified as cross sections of water with a flow toward Kainan Bay from seaward.

Temperature minima, as seen in the two north-south cross sections (Figs. 7 and 8), slope toward bottom from the shelf edge to the coast. Over the shelf, the water generally has a negative thermal gradient from the surface to bottom.

b. Salinity

Salinity sections show Circumpolar Water at the stations north of the 1,000-meter depth contour, with maximum salinities around 800 meters (Figs. 7 and 8). Below this depth, only a slight decrease was noted to bottom. At the stations taken over the continental shelf, salinities increased from surface to bottom and reached values slightly higher than 34.50‰ on some stations. Surface values at all stations were 34.00‰ and higher, with values greater than 34.25‰ observed at several stations.

c. Sigma-t

Isopycnals on the west-east profiles generally slope downward to the east, and on the north-south profiles generally slope downward to the north and east; the easternmost section (Fig. 8) shows a weak gradient.

d. Dissolved Oxygen

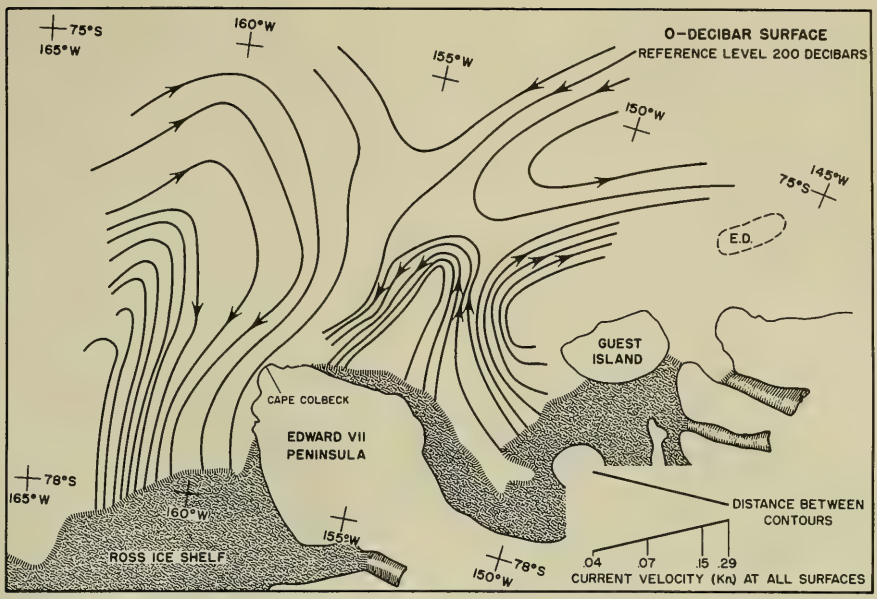
On the west-east profiles, oxygen minimum values were found at the bottom on the sections over the continental shelf. The oxygen minimum layer within the Circumpolar Water was located between 500 and 600 meters, just above the depth of the salinity maximum and at about the same depth as the temperature maximum. The north-south profiles show an oxygen minimum layer of less than 4.50 ml/l in a broad zone generally between 400 and 1,200 meters, extending from the north to the continental shelf. This pattern of oxygen distribution provides supporting evidence for the circulation derived by dynamic topography.

3. Dynamic Topographies

In order to draw dynamic height charts (Figs. 9 and 10) of the Eastern Ross Sea area and include data for the majority of stations, it was necessary to select a reference level of 200 decibars. This is not a level of no motion, nor is it a level of oxygen minimum, but it does permit an estimation of circulation in the area. Prior to selecting the 200 decibar level as the reference level, other levels (500, 1000, and 1500 decibars) were used as a reference level. In each case, the same general circulation pattern was apparent; that is, a seaward flow to the east of Edward VII Peninsula, a shoreward flow to the west of Edward VII Peninsula, and a west-to-east flow about 150 miles north of the shoreline. Maximum current speeds were found at the surface which decreased in intensity with depth.

On the west side of the area, a large clockwise circulation is apparent, which probably was induced by combined effects of the eastward flowing Circumpolar Water and the prevailing winds. This current pattern reached to station 7, approximately 165 miles seaward, from the edge of the Ross Ice Shelf and Cape Colbeck and decreased in magnitude with increasing depth. At the 150-decibar level, it extended about 100 miles from the Ross Ice Shelf. Current speeds ranged from 0.3 knot at the surface to 0.1 knot at the 150-decibar surface; not only did the speed decrease to 0.1 knot at this level, but a weak counterclockwise component appeared at the northwest corner of the area.

To the west of Guest Island, a seaward flow is found at all levels with speeds also ranging from 0.3 knot at the surface to 0.1 knot near the bottom. Two components of this flow were noted from the 0- to 50-decibar levels; an eastern component forming a weak clockwise circulation and a western component forming a major counterclockwise current around Cape Colbeck. From the 100- to 150-decibar levels, the apparent flow was to the west as a counterclockwise current. The clockwise circulation weakened and disappeared at these levels.



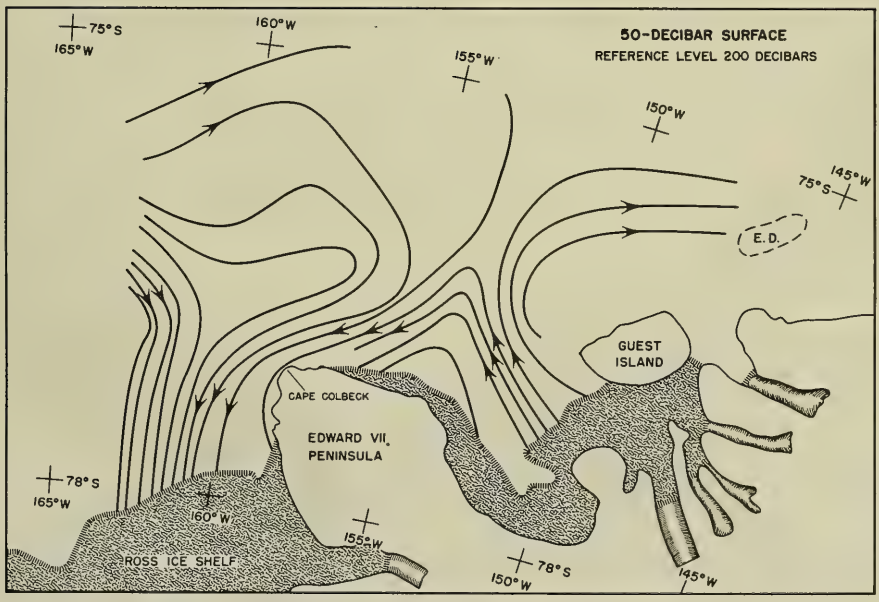


FIGURE 9. DYNAMIC TOPOGRAPHIES, EASTERN ROSS SEA
(0- and 50-DECIBAR SURFACES)

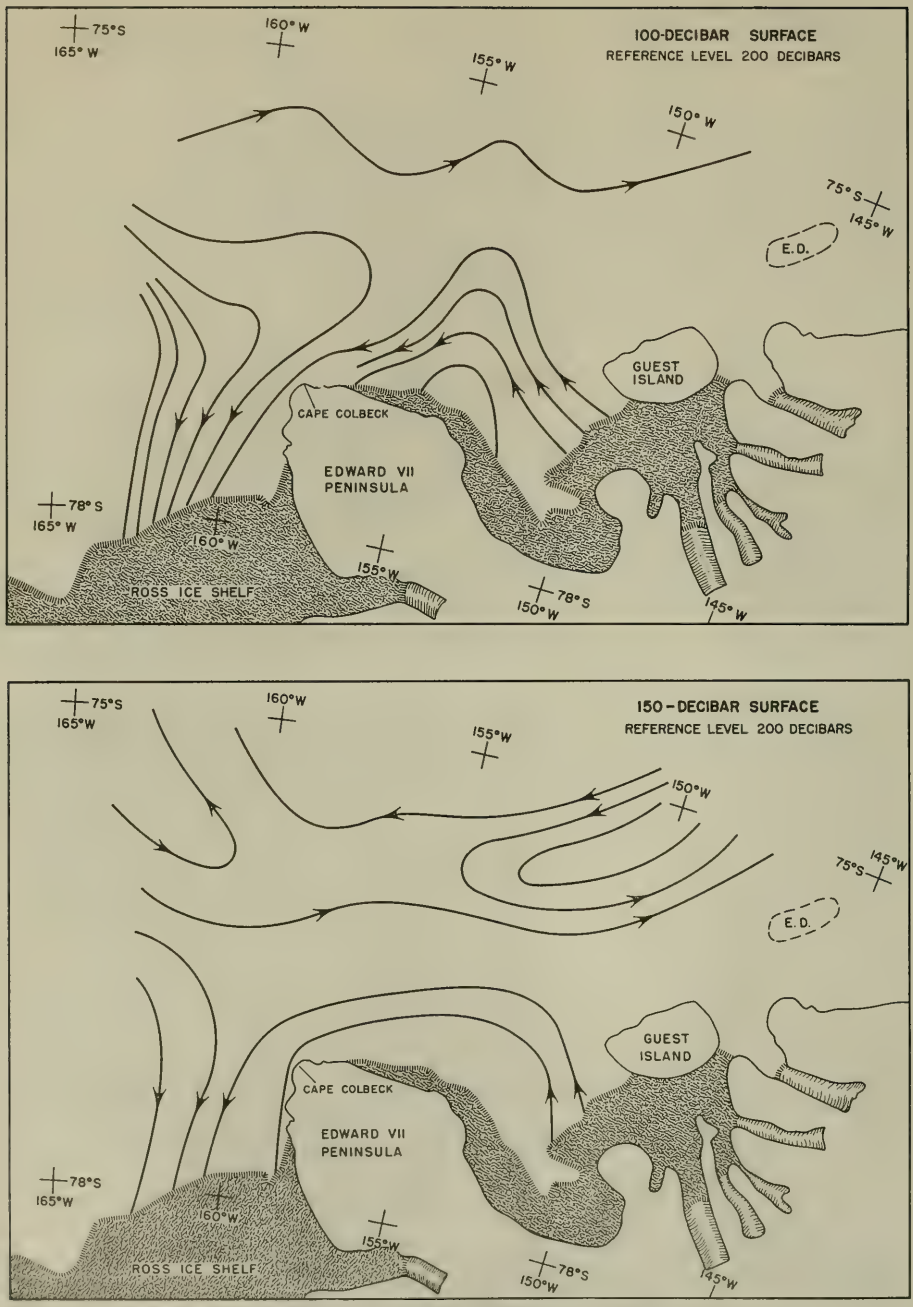


FIGURE 10. DYNAMIC TOPOGRAPHIES, EASTERN ROSS SEA
(100- and 150-DECIBAR SURFACES)

The major water transport at all levels in the Sulzberger Bay-Cape Colbeck area appears to be to the west along the Edward VII Peninsula. It flows past Cape Colbeck and merges with the southward moving component of the major clockwise circulation.

It is suggested that the water of the Eastern Ross Sea flows southward against the Ross Ice Shelf, where the near-surface water is deflected to the west and the deeper water flows under the shelf, possibly around the southern tip of Roosevelt Island, and emerges well to the west. An examination of the dynamic analysis charts (Figs. 9 and 10) supports such a postulation for the southward-flowing portion of this circulation.

C. Amundsen Sea Area

1. General

The Amundsen Sea lies between Thurston Island (formerly believed to be a peninsula) on the east and Mount Siple 400 miles to the west. The area surveyed was about 250 miles north of the Amundsen Sea coastline between 105° and 120°W. Twenty-four stations were occupied during the period 27 January to 5 February 1961, most of which were taken in 7/10 to 9/10 rotten pack ice.

The vertical distribution of observed physical and chemical properties is shown for the Amundsen Sea area stations in Figures 11 through 15. One west-east cross-section is presented for stations to the north (Fig. 11) and one for stations to the south of 70°S (Fig. 12). Three north-south cross-sections are given (Figs. 13 through 15). Bottom contours in these sections are based on wire soundings taken on station.

2. Physical Properties

a. Temperature

Temperature cross-sections show the thin layer of Antarctic Surface Water with Winter Water immediately beneath, and the rapid transition to Antarctic Circumpolar Water. Bottom Water with temperatures less than 0.4°C was present at several stations.

Maximum temperatures were between 1.50° and 2.00°C, except at the two southernmost stations, 43 and 42, where temperatures were slightly colder than 1.50°C. Surface temperatures varied widely ranging from 0.23° to -1.77°C; a subsurface minimum (Winter Water) was observed in the upper 100 meters at all stations. Between 100 and 200 meters, a rapid temperature increase, (the transition zone into Circumpolar Water), is indicated by the heavy concentration of isotherms. Farther south, this transition zone was found at greater depths. Below the temperature maximum, a gradual decrease to bottom temperatures of around 0.4°C was observed.

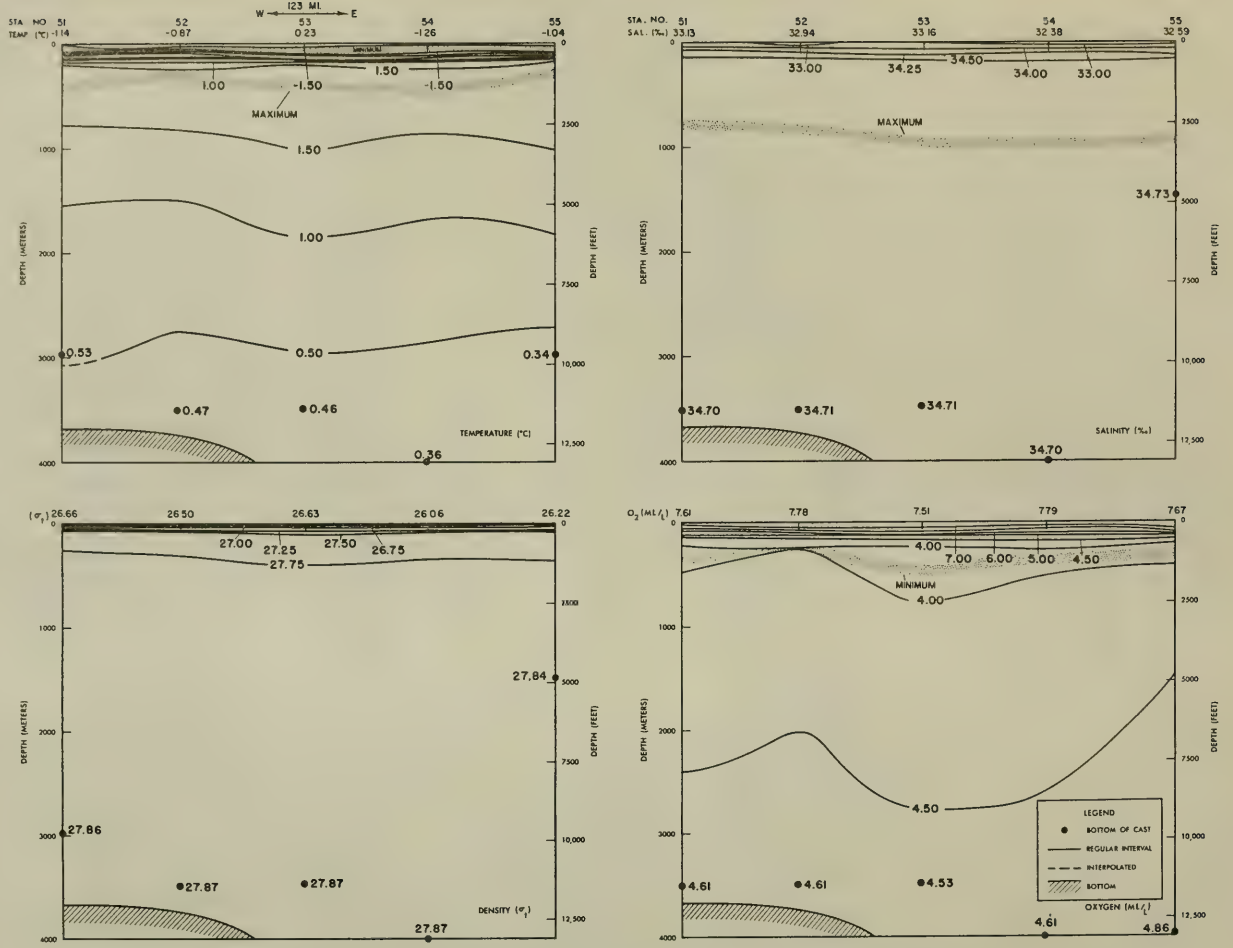


FIGURE 11. VERTICAL DISTRIBUTION OF TEMPERATURE, SALINITY, SIGMA-T, AND DISSOLVED OXYGEN, AMUNDSEN SEA AREA (STATIONS 51 through 55)

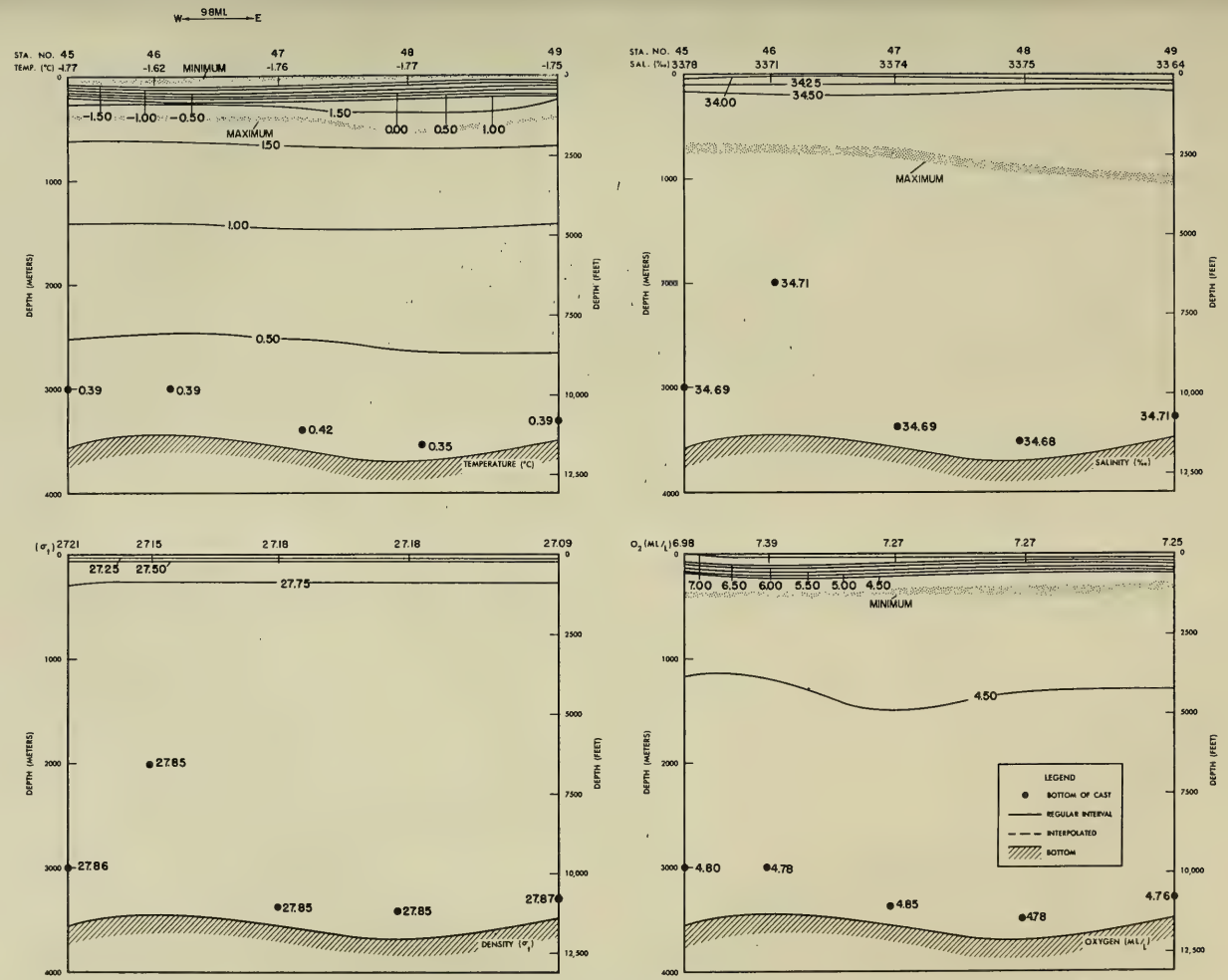


FIGURE 12. VERTICAL DISTRIBUTION OF TEMPERATURE, SALINITY, SIGMA-T, AND DISSOLVED OXYGEN, AMUNDSEN SEA AREA (STATIONS 45 through 49)

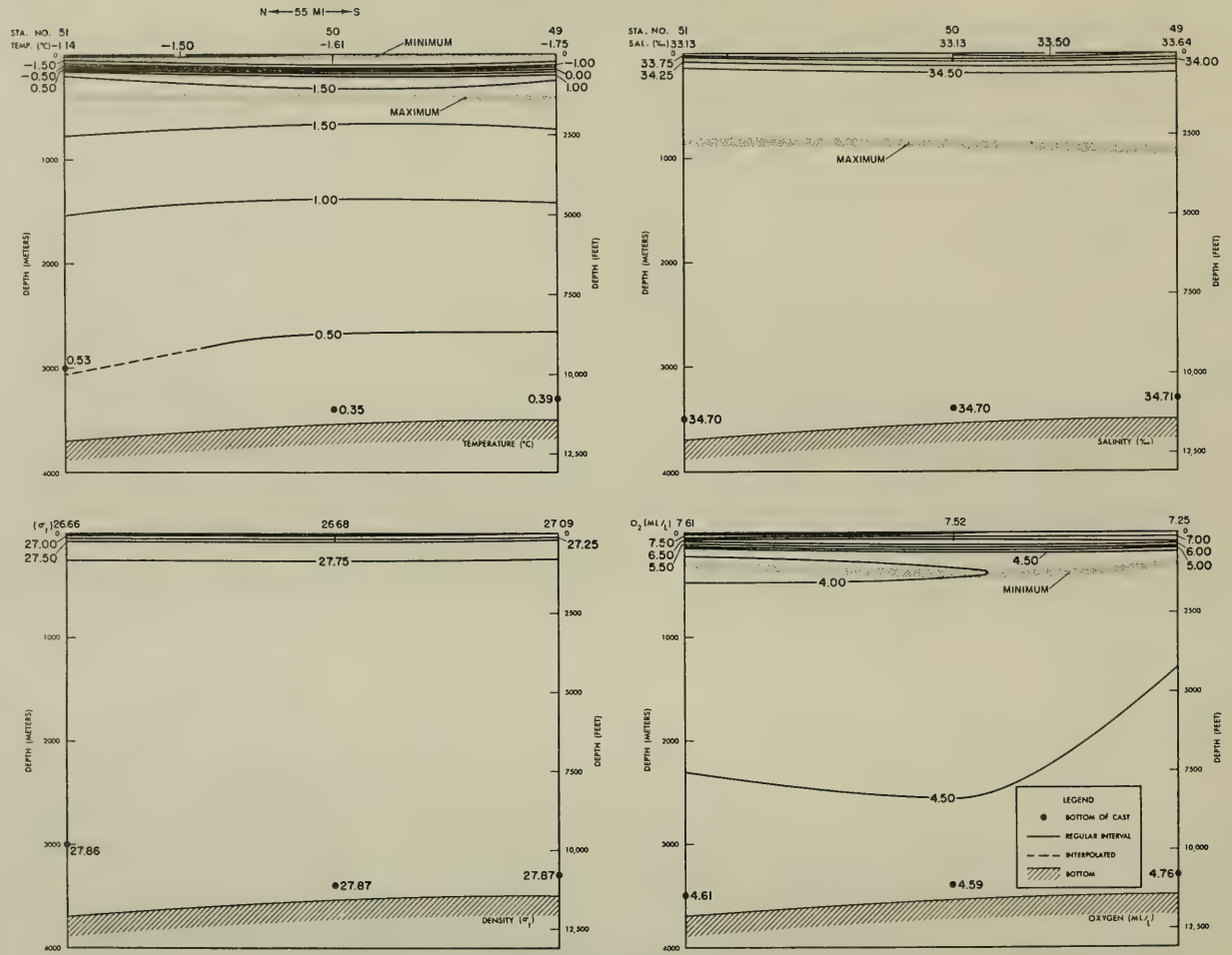


FIGURE 13. VERTICAL DISTRIBUTION OF TEMPERATURE, SALINITY, SIGMA-T, AND DISSOLVED OXYGEN, AMUNDSEN SEA AREA (STATIONS 49 through 51)

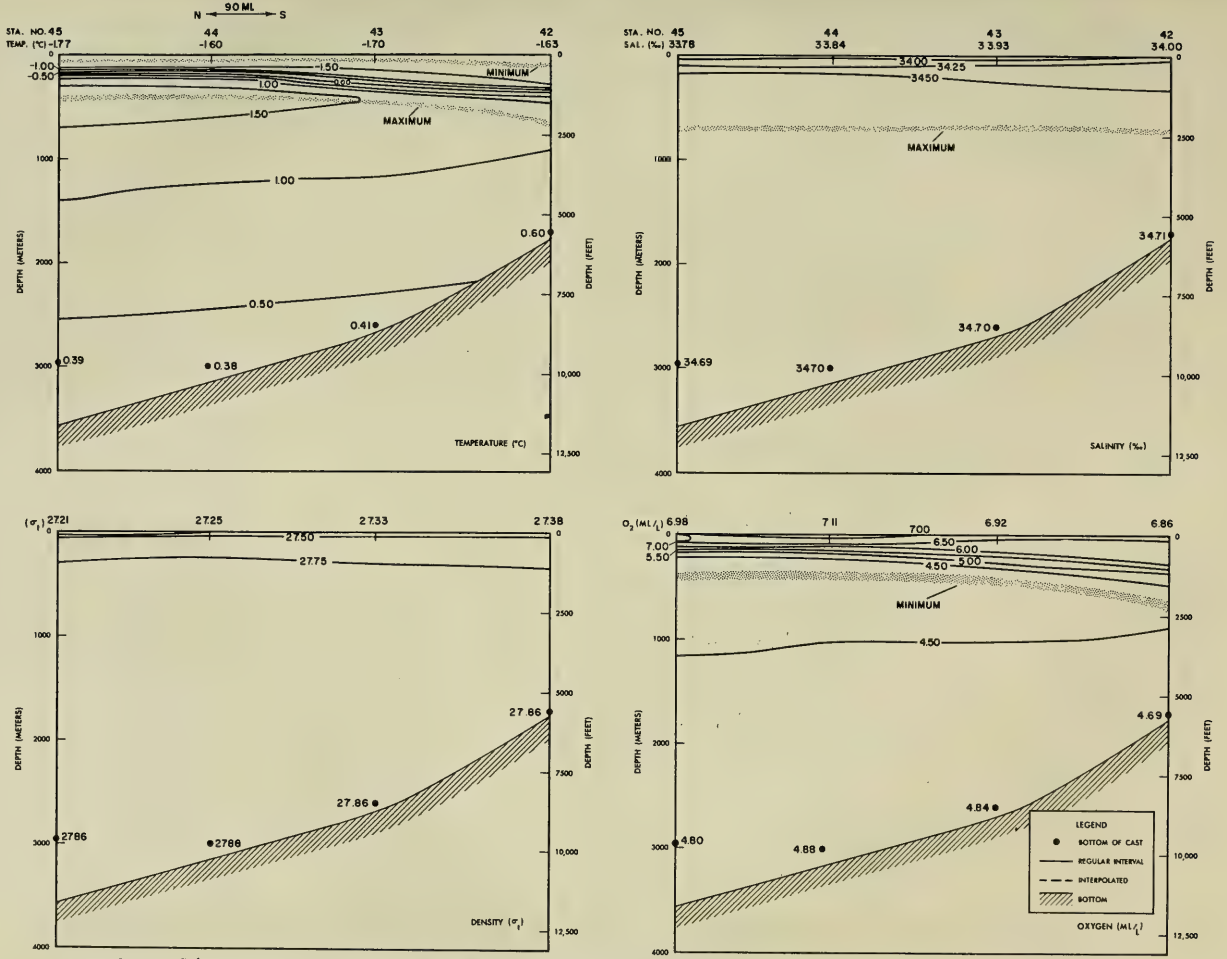


FIGURE 14. VERTICAL DISTRIBUTION OF TEMPERATURE, SALINITY, SIGMA-T, AND DISSOLVED OXYGEN, AMUNDSEN SEA AREA (STATIONS 42 through 45)

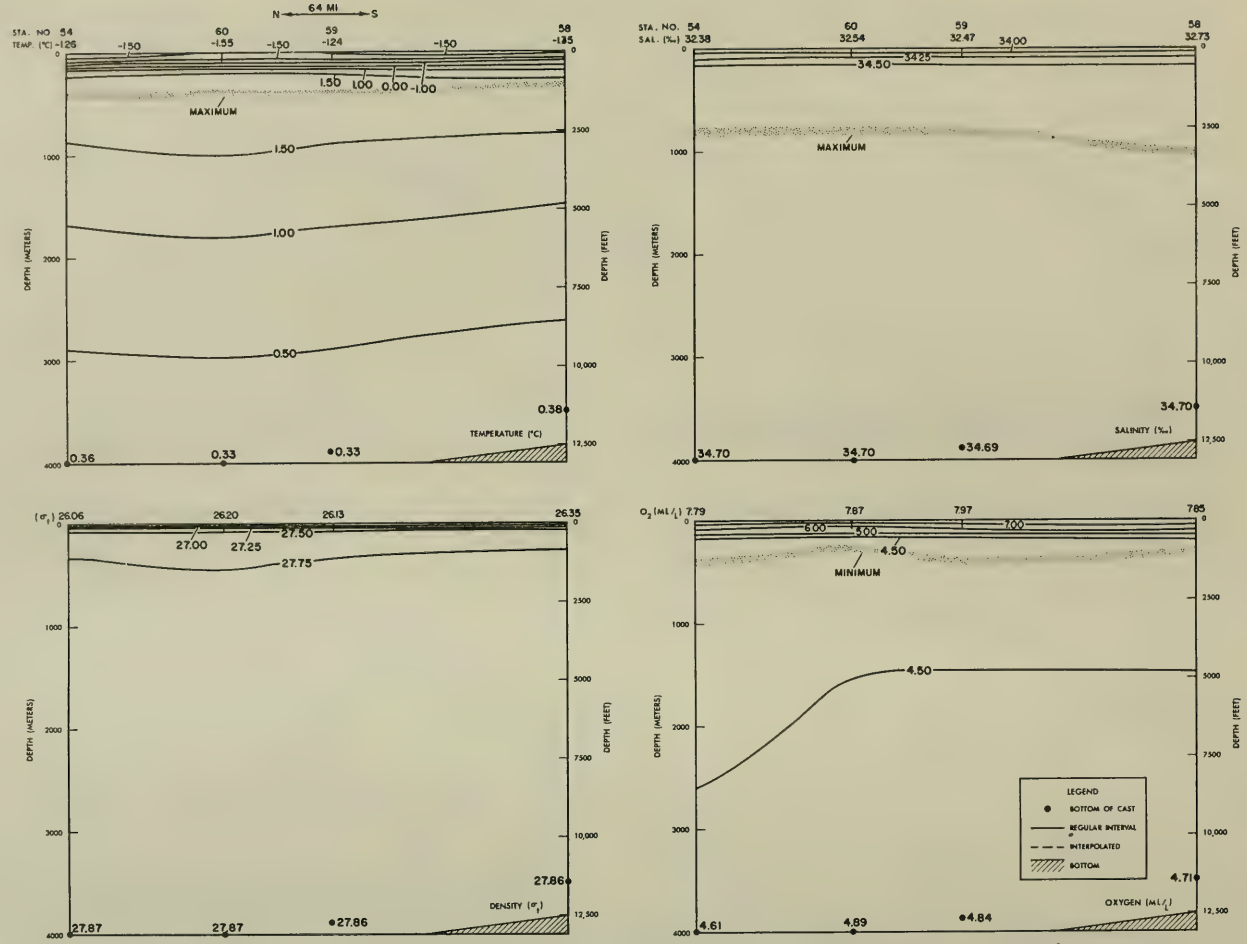


FIGURE 15. VERTICAL DISTRIBUTION OF TEMPERATURE, SALINITY, SIGMA-T, AND DISSOLVED OXYGEN, AMUNDSEN SEA AREA (STATIONS 54, 58 through 60)

b. Salinity

The range of surface salinities in this area was from 32.38 to 34.00‰. In the upper 200 meters, salinities increased rapidly to 34.50, with 34.00 through 34.25‰ appearing in the area of minimum temperatures. Salinities continued to increase with depth to a maximum of about 34.74‰ at approximately 800 meters and decreased to a minimum of 34.68‰ near the bottom.

c. Sigma-t

Surface sigma-t values less than 27.00 were observed at the stations east and north of station 49; to the west and southwest, values were slightly greater. Within the upper 100 meters, values increased rapidly to 27.50 at all stations. The 27.75 isopycnal occurred between 200 and 400 meters, and below this, sigma-t values increased slightly to maximum values of 27.87 near the bottom. Sigma-t values appeared to be very uniform horizontally throughout the area.

d. Dissolved Oxygen

Dissolved oxygen content in the surface water was greater than 7.00 ml/l at all stations, except stations 42, 43, and 44 (Fig. 14). Below the surface, oxygen values decreased rapidly to about 400 meters, where minimum values of about 4.00 ml/l were observed. At stations 50, 51, and 55, oxygen minima were less than 4.00 ml/l. Below this minimum layer, oxygen content increased to the bottom with values approaching 5.00 ml/l.

3. Dynamic Topographies

Considering the oxygen minimum layers as indicative of levels of no motion, a plot of oxygen minimum values shows the levels of no motion to be in the vicinity of 350 to 800 meters in the western portion of the area surveyed, and to slope downward to the south. In the eastern portion, depths of minimum oxygen varied. This is an area of strong counterclockwise circulation, where considerable differences are found in dynamic heights at the same standard depths between any two stations, especially below 500 meters.

Because of the amount of variability between eastern and western sectors of the area, the reference level was selected as the greatest depth reached at most of the stations, which in this case was 2,500 meters. As a check, dynamic height charts were plotted using different reference levels, and they depicted a similar circulation pattern.

The stations (38 through 61) upon which these calculations are based were taken south of the Convergence zone and north of the Divergence zone. They are located in the transition zone between the surface West Wind Drift to the north and East Wind Drift to the south. These stations were taken within a 10-day period, from 27 January to 5 February 1961.

A dominant feature at all surfaces is the strong counterclockwise circulation in the eastern side of the area (Figs. 16 through 18). The 2,000-fathom line passes generally through the western edge of this cell, with greater depths to the north and east. This cell increases in size from the bottom to the 250-decibar surface. From this surface to the zero-decibar surface, it is not as distinct and is displaced slightly to the northwest.

In the western sector of the area, another cell with a counterclockwise circulation is apparent at all levels. This cell increases in magnitude from the surface to the 250-decibar surface. Below this, it decreases to the 500-decibar surface, and increases to a maximum at the 1000- and 1500-decibar surfaces. This counterclockwise circulation then decreases to a small cell at the 2000-decibar surface.

Between these two major cells, a clockwise circulation is evident at all levels. In contrast to the two major counterclockwise cells, this clockwise circulation decreases from the surface to the 1500-decibar surface, where it appears as a very small cell. From this level to the 2000-decibar surface, it increases to its maximum size.

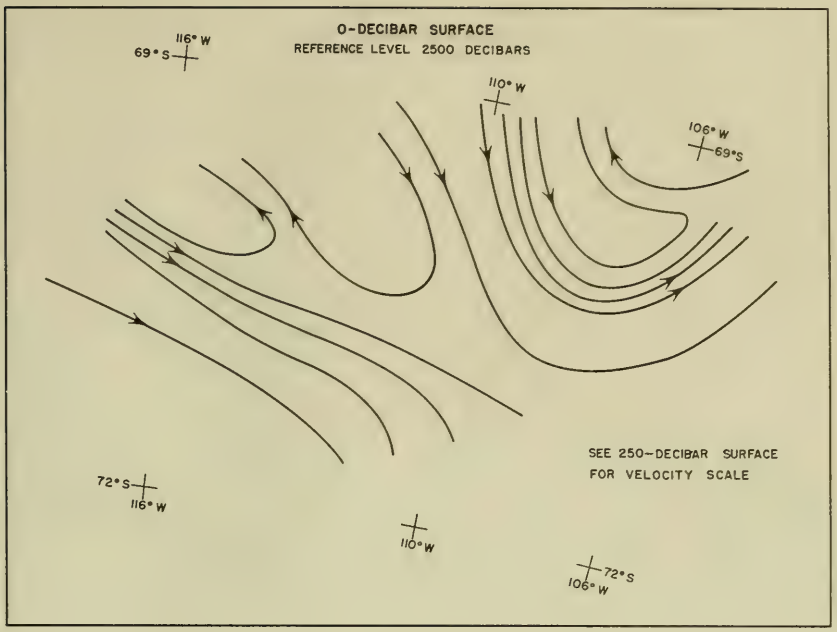
South of these three cells, a southeasterly transport is evident at all levels west of approximately 109°W. This transport then shifts to the northeast and continues to the easternmost sector of the area.

D. Bellingshausen Sea Area

1. General

The Bellingshausen Sea is located between Thurston Island on the west and Palmer Peninsula on the east. The eighteen stations occupied north of Thurston Island and in western Bellingshausen Sea were in relatively shallow water; station 79, located between the Amundsen and Bellingshausen Seas, was the deepest in the area, with a depth of 2,300 meters. Station 68 was taken at the edge of heavy impenetrable shore-fast ice. The period of observation was 7 February to 9 March 1961.

Vertical distribution of observed physical and chemical properties in the Bellingshausen Sea is presented in four cross-sections, Figures 19 through 22. Bottom contours in these sections were constructed from wire soundings at the stations.



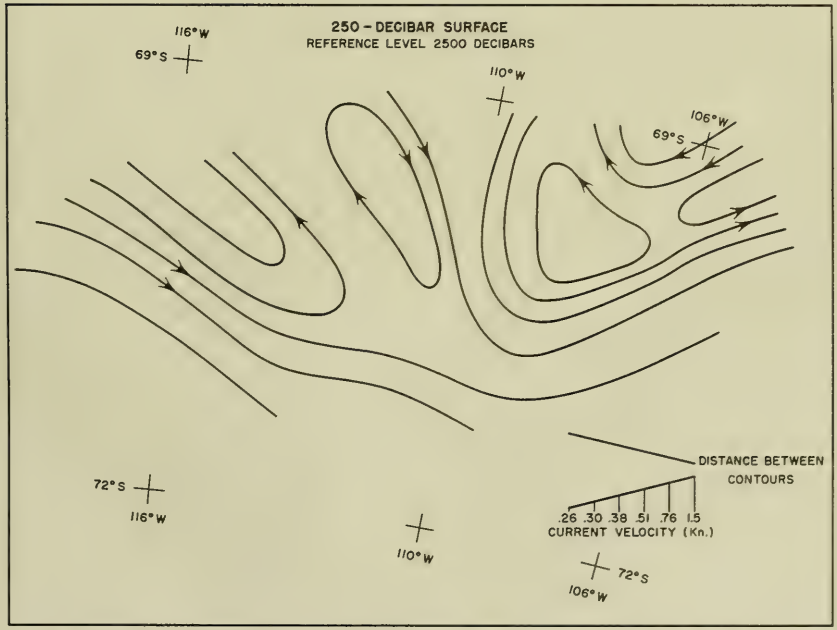
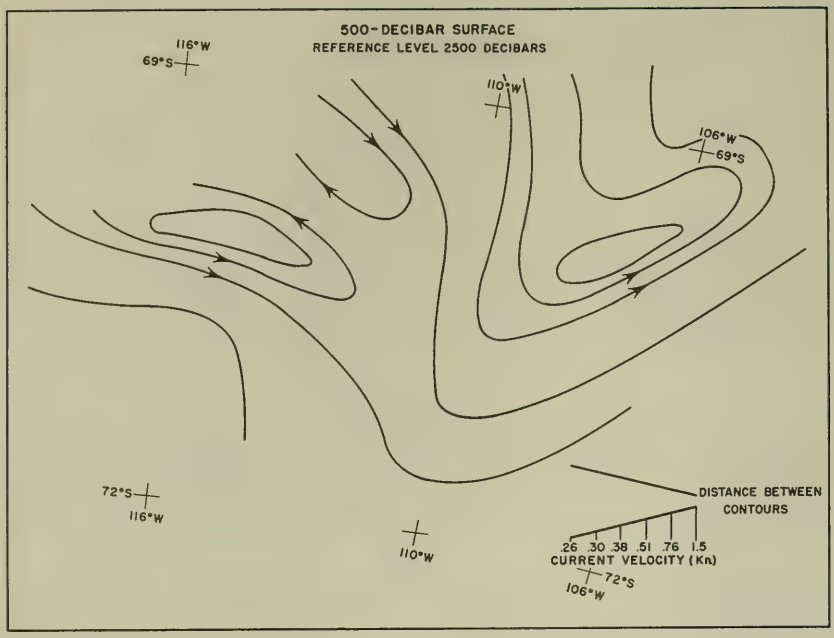


FIGURE 16. DYNAMIC TOPOGRAPHIES, AMUNDSEN SEA AREA
(0- and 250-DECIBAR SURFACES)



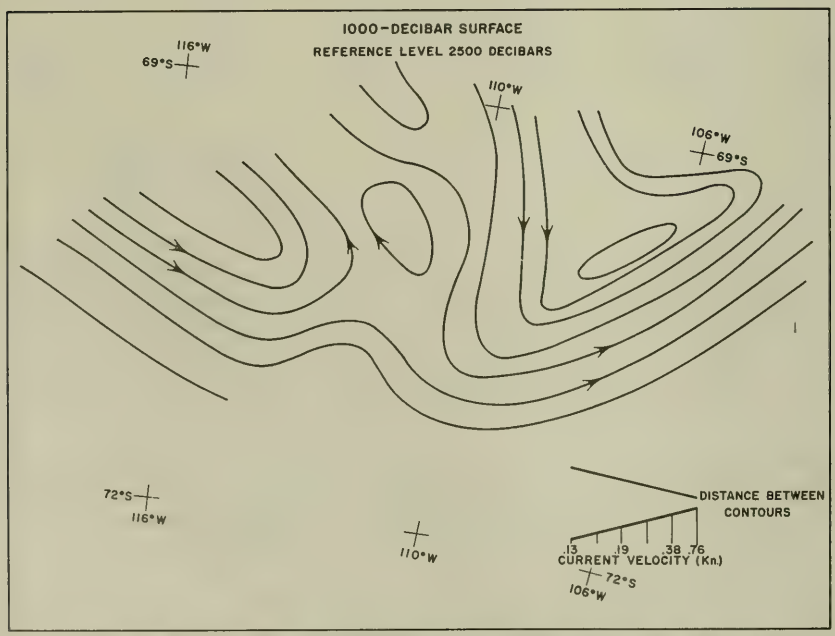
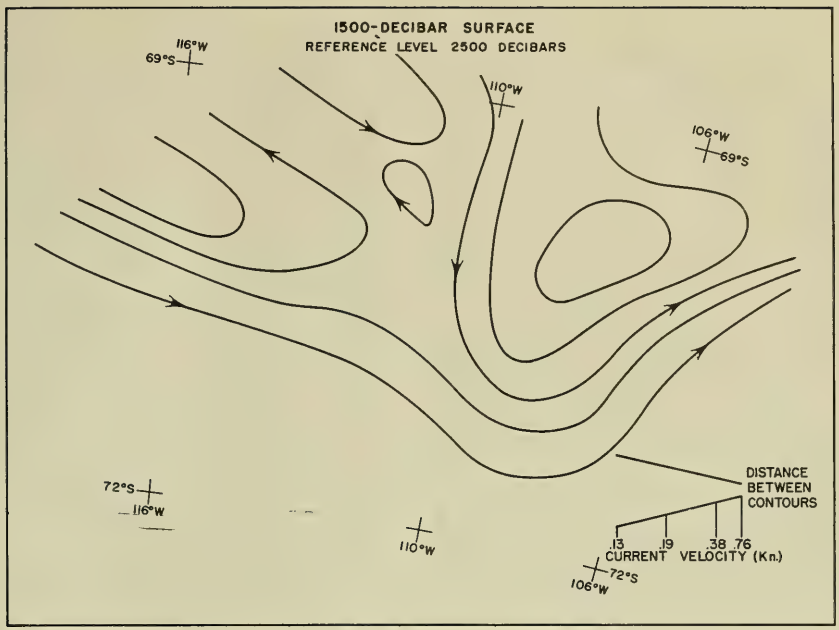


FIGURE 17. DYNAMIC TOPOGRAPHIES, AMUNDSEN SEA AREA
(500- and 1000-DECIBAR SURFACES)



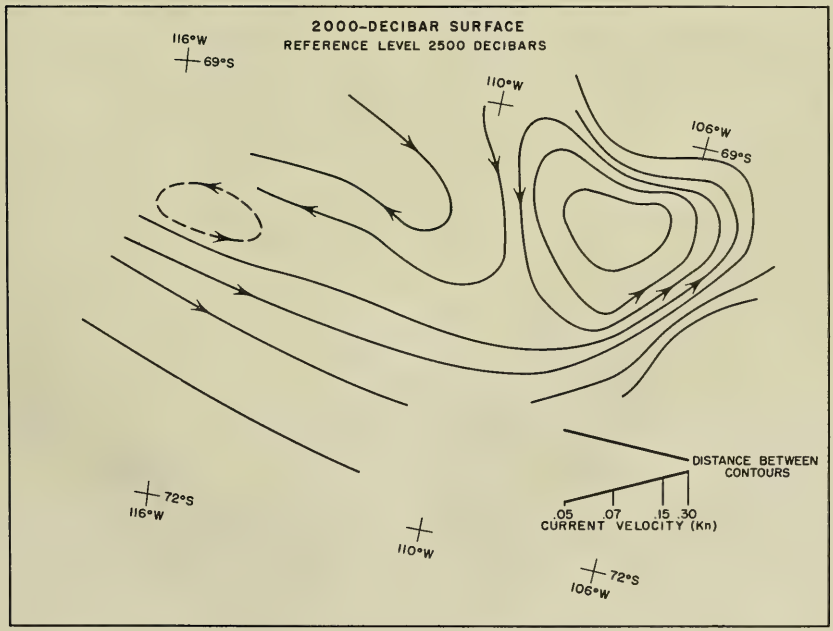


FIGURE 18. DYNAMIC TOPOGRAPHIES, AMUNDSEN SEA AREA (1500- and 2000-DECIBAR SURFACES)

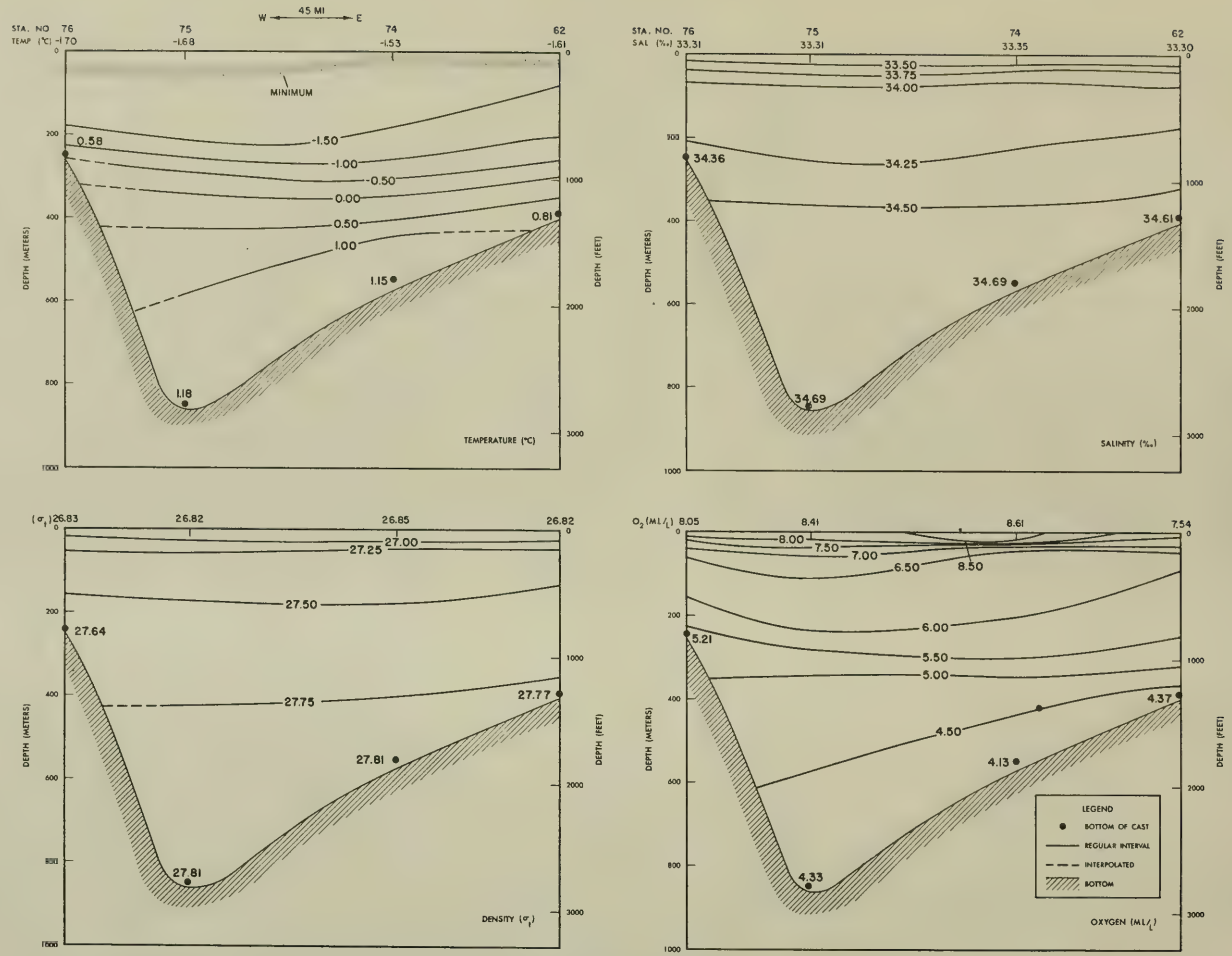


FIGURE 19. VERTICAL DISTRIBUTION OF TEMPERATURE, SALINITY, SIGMA-T, AND DISSOLVED OXYGEN, BELLINGSHAUSEN SEA AREA (STATIONS 62, 74 through 76)

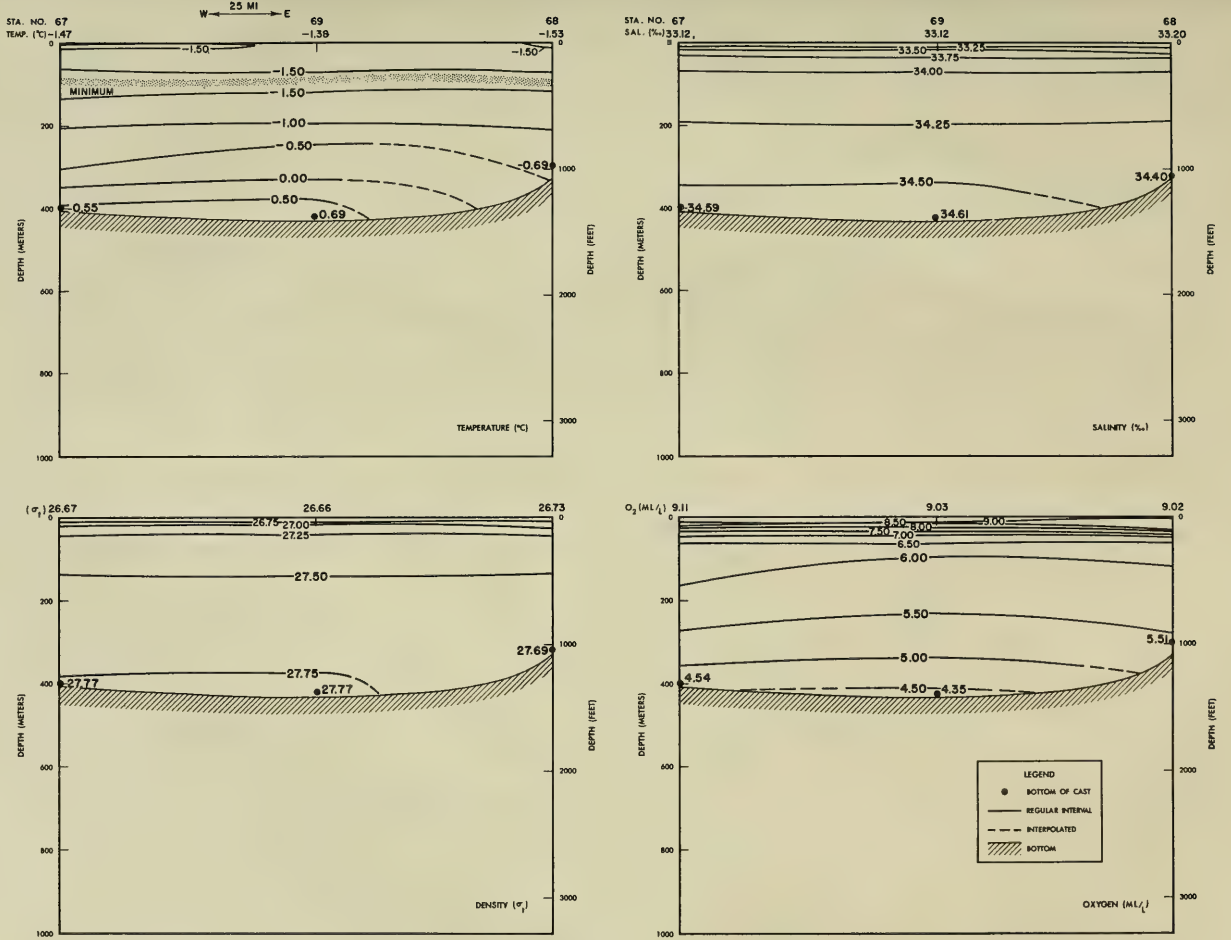


FIGURE 20. VERTICAL DISTRIBUTION OF TEMPERATURE, SALINITY, SIGMA-T, AND DISSOLVED OXYGEN, BELLINGSHAUSEN SEA AREA (STATIONS 67 through 69)

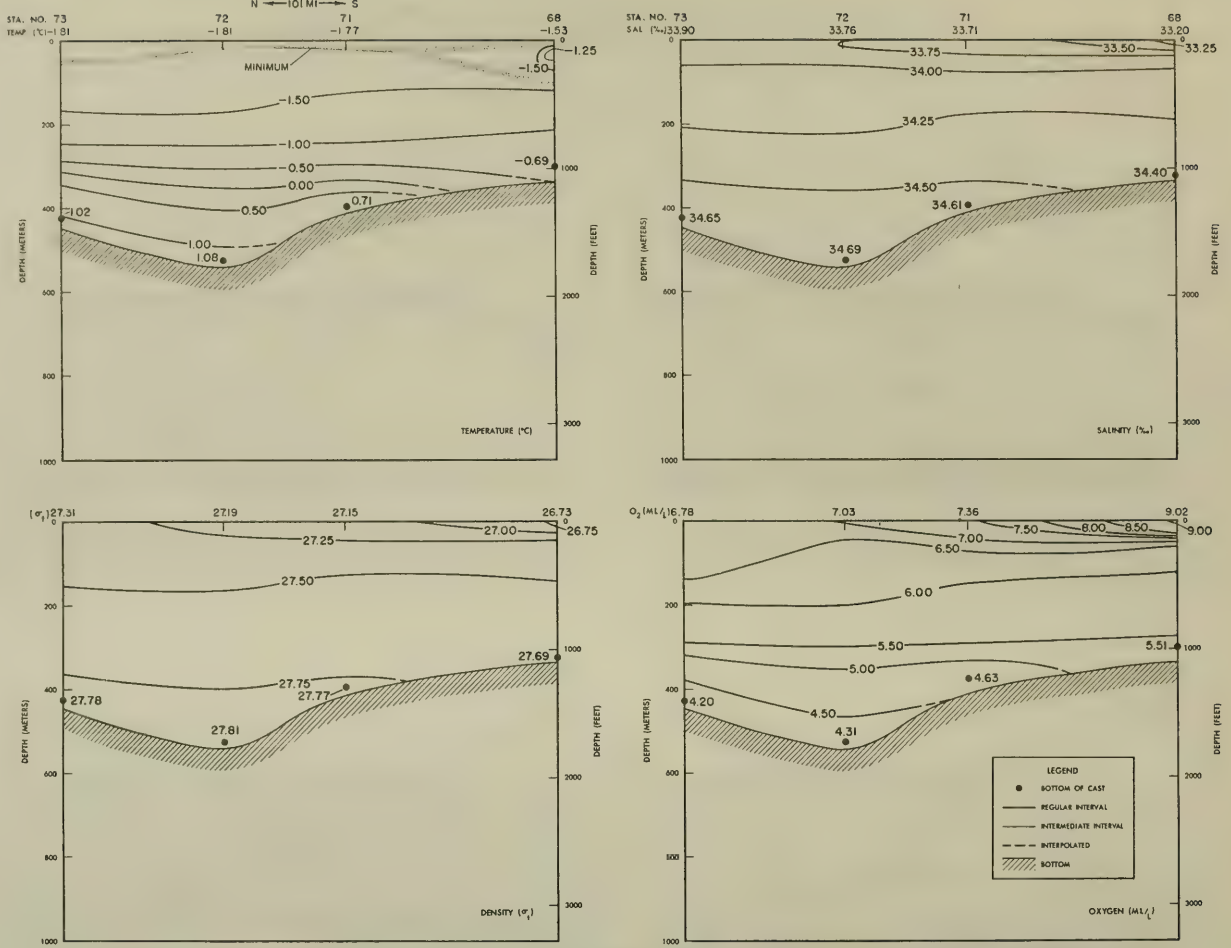


FIGURE 21. VERTICAL DISTRIBUTION OF TEMPERATURE, SALINITY, SIGMA-T, AND DISSOLVED OXYGEN, BELLINGSHAUSEN SEA AREA (STATIONS 68, 71 through 73)

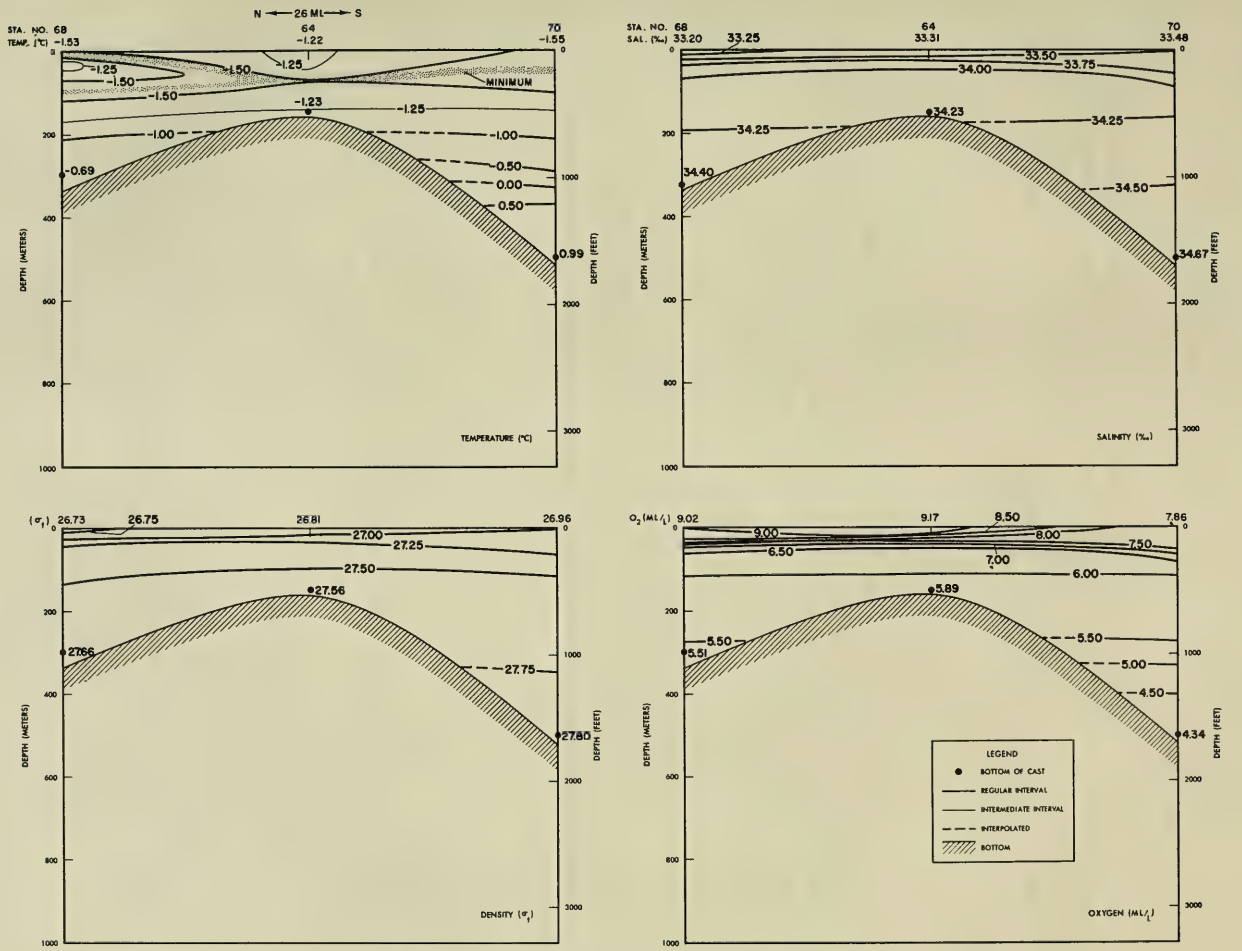


FIGURE 22. VERTICAL DISTRIBUTION OF TEMPERATURE, SALINITY, SIGMA-T, AND DISSOLVED OXYGEN, BELLINGSHAUSEN SEA AREA (STATIONS 64, 68, and 70)

2. Physical Properties

a. Temperature

These cross-sections show a subsurface minimum (Winter Water) with temperatures colder than -1.50°C in the upper 100 meters. Below this minimum layer, temperature increased with depth to the bottom, where maximum temperatures were observed. A subsurface layer of slightly warmer water existed above 50 meters at a number of stations north of Eights Coast.

b. Salinity

The most rapid increase in salinity occurred in the upper 75 meters in the area of transition from the thin layer of Surface Water to Winter Water. Salinity increased to a value of 34.00‰. The northwest-southeast cross section (Fig. 21) shows surface salinities progressively decreasing southwardly from 33.90‰ at station 73 to 32.20‰ at station 68. Horizontal distribution of salinities otherwise were generally uniform.

c. Sigma-t

Isopycnals closely paralleled the isohalines in all cross-sections. At stations 71, 72, and 73 (Fig. 21), surface sigma-t values were greater than 27.00 and were less than 27.00 at station 68 and all stations in Figures 19, 20, and 22. Sigma-t values as high as 27.81 were observed near the bottom on the deepest stations.

d. Dissolved Oxygen

Dissolved oxygen content decreased with depth throughout the area. The greatest surface oxygen variation occurred at stations 68 through 73 (Fig. 21), where a value of 9.02 ml/l was observed at station 68 and 6.78 ml/l at station 73. Oxygen values decreased to less than 4.5 ml/l near the bottom at the deepest stations.

E. Comparative Station Profiles

Temperature-salinity plots for stations in the areas surveyed during DEEP FREEZE 61 were prepared and are shown in Figure 23. From these plots, a representative station was selected from each area for illustration and comparison. Profiles of the observed physical and chemical properties, Figure 24, were prepared for each of the representative stations.

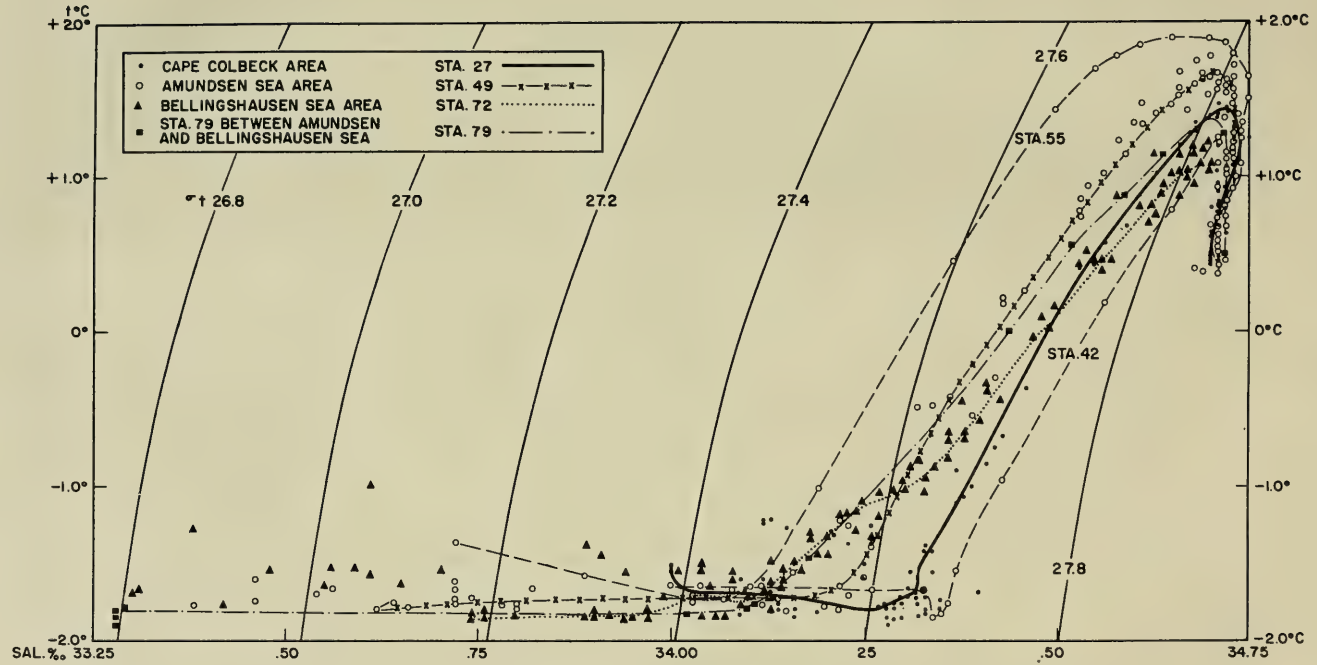


FIGURE 23. COMPARATIVE TEMPERATURE-SALINITY PLOTS FOR CAPE COLBECK, AMUNDSEN SEA AND BELLINGSHAUSEN SEA AREAS

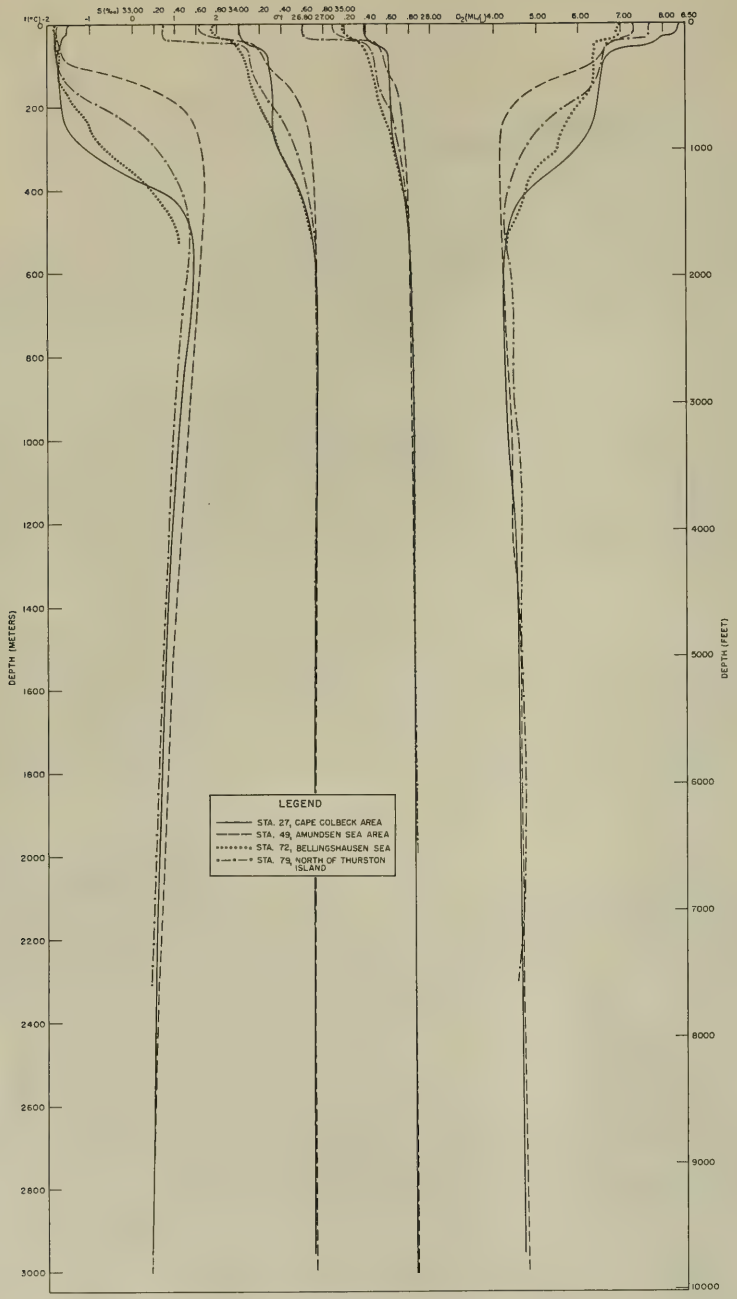


FIGURE 24. COMPARATIVE PROFILES OF TEMPERATURE, SALINITY, SIGMA-T, AND DISSOLVED OXYGEN FOR CAPE COLBECK, AMUNDSEN SEA AND BELLINGSHAUSEN SEA AREAS

From these profiles, two distinct water layers in the Antarctic region are apparent: Antarctic Upper Water above 200 meters, and Antarctic Deep Water which extends to the bottom. Within the Antarctic Upper Water, Antarctic Surface Water and Antarctic Winter Water can be distinguished. Separating these two water masses is a transition layer identified by steep positive salinity and density gradients. Below the Antarctic Winter Water, a second transition layer exists, as defined by the temperature profiles, where a steep positive gradient is found. This layer lies between Upper Water and Deep Water.

Station 27 is located in the Cape Colbeck area (75°31'S, 152°08'W). Surface water, with temperatures about -1.55°C and salinities 34.00‰, extended to 25 meters. Below this, a transition layer occurred to 75 meters, where a minimum temperature was observed. From 25 to 75 meters, salinities increased rapidly to 34.27‰ and only slightly thereafter to 200 meters. Below 200 meters, a transition from Upper to Deep Water occurred, with a sharp positive temperature gradient to 450 meters. Maximum temperature of 1.45°C was observed about 600 meters. From this level to the bottom, temperatures decreased gradually to less than 0.5°C. The salinity profile shows a weaker positive gradient between 250 and 500 meters, and a maximum salinity of 34.74‰ about 800 meters. From 800 meters to the bottom, salinity decreased slightly to a value of 34.70‰. The sigma-t profile in the upper 600 meters closely parallels that for salinity, and below this gradually increases to the bottom. Sigma-t values ranged from 27.38 at the surface to 27.86 at about 3,000 meters. Dissolved oxygen content decreased from greater than 8.00 ml/l at the surface to a minimum of 4.00 ml/l at about 600 meters. Below 600 meters, oxygen values increased slightly to 4.67 ml/l around 3,000 meters near the bottom.

Station 49 was occupied in the Amundsen Sea area (70°08'S, 111°30'W). The temperature profile shows a surface value of -1.75°C, a decrease to about 10 meters, and then a slight increase to -1.65°C at 75 meters. The sharp positive gradient of transition occurred between 75 and 250 meters, the lower limit being nearer the surface than at station 27 in the Cape Colbeck area. Temperature maximum was 1.68°C at 400 meters. Below this, the curve follows the same pattern as observed at station 27 but with temperatures approximately 0.2°C higher to about 2,200 meters. From this level, temperatures approached those observed at station 27 and became identical near the bottom. Salinities decreased from the surface to 10 meters, where 33.62‰ was observed, and then increased to 34.14‰ at 50 meters. Between 50 and 100 meters, a positive gradient was still evident but to a lesser degree than above and below these depths. Maximum salinity of 34.73‰ occurred at about 600 meters; below this level to the bottom, salinity values were nearly identical at the four selected stations. Sigma-t values ranged from 27.08 at the surface to 27.86 near the bottom. Oxygen values were about 7.25 ml/l at surface, increased to 7.30 in the upper 25 meters and decreased to a minimum of 4.15 ml/l about 300 meters. Below this, they paralleled those observed at station 27.

Station 72, located in the Bellingshausen Sea (71°29'S, 094°00'W), had a surface temperature of -1.80°C, decreasing slightly below surface and increasing again to -1.70°C at 75 meters. Another decrease to -1.80°C was observed at 125 meters. Below this a positive gradient, as noted on the other stations, but with a less pronounced slope, occurred to maximum sampling depth of 525 meters. Water temperatures were colder than in the Amundsen Sea area. The salinity profile is similar to those at stations 27 and 49, but with less prominent positive gradients at the transition zones. Surface salinity was 33.76 and 34.69‰ at 525 meters. Oxygen values in the upper 100 meters were less than those at corresponding depths in the Amundsen Sea and Cape Colbeck areas but followed the same general pattern. Below this, a lesser gradient was observed to 525 meters, where the profiles for all stations merge. Surface oxygen was 7.02 ml/l.

Station 79 was selected for comparison because of its location at 70°51'S, 101°54'W, between the Amundsen Sea and Bellingshausen Sea stations and because of its intermediate depth. A nearly isothermal layer extended to 100 meters with a surface temperature around -1.80°C. Below this was found the same positive temperature gradient as seen at stations 27 and 49, but this section of the profile plotted between the two stations. Below 500 meters, temperatures were 0.1 to 0.2°C colder than those of corresponding depths on station 27, and about 0.5°C colder than those of station 49 in the Amundsen Sea. Near-bottom temperature at 2,300 meters was 0.45°C. Salinities in the upper 50 meters were lower at this station than at the other three stations. A surface value of 33.29‰ was recorded. From 50 meters to about 600 meters, salinity values plotted between those for the Amundsen and Bellingshausen Seas; below 600 meters to the bottom salinity values were the same as those for the other representative stations. Oxygen values followed the same pattern in the upper 550 meters and below this were slightly higher than at stations 27 and 49.

In summary, Antarctic Surface Water with temperatures below 0°C was observed in the upper 25 meters, with a slight temperature decrease just below the surface. This water mass was nearly isosaline in the Cape Colbeck area and north of Thurston Island; salinities decreased slightly immediately below the surface in Amundsen and Bellingshausen Seas. The seasonally lower surface salinities are attributed to summer ice melt, which also resulted in low surface densities, in some cases a sigma-t value less than 27.00. Dissolved oxygen values were high, ranging between 7.00 and 9.00 ml/l.

Below the Antarctic Surface Water the transition layer was located between the variable Surface Water and the more homogeneous Winter Water. This is most noticeable in the salinity and oxygen profiles by the steep positive salinity and negative oxygen gradients between 25 and 75 meters. This transition layer overlays Antarctic Winter Water with slight temperature variations in the different areas, while the lower limits of this water mass varied between 75 meters in the Amundsen Sea area to

200 meters in the Cape Colbeck area. Temperatures were about -1.75°C, and salinity values ranged from 34.00 to 34.40‰. Oxygen content appeared quite uniform, ranging from 6.25 to 6.65 ml/l.

Below the Antarctic Winter Water, a second transition layer extended to the Antarctic Deep Water. This was indicated by a steep positive gradient in the temperature profile and a steep negative gradient in the oxygen profile. The depth at which this transition layer was found varied considerably in the different areas. North of Amundsen Sea, about 70°S, this layer was between 100 and 200 meters; whereas, in the Cape Colbeck area, about 75°S, it was observed at greater depths, between 250 and 450 meters. Between these two latitudes, it was located at intermediate depths. The temperature increase for all areas was approximately 2.5°C, from about -1.50 to 1.00°C; the salinity increase was of the order of 0.5‰, from 34.20 to 34.65‰; and the oxygen decrease was approximately 2 ml/l, from around 6.3 to 4.2 ml/l.

Immediately below this transition layer were found maximum temperature, salinity, and minimum oxygen values. This Antarctic Deep Water is referred to in this report as Antarctic Circumpolar Water, with the area of maximum temperatures and minimum oxygen concentrations identifying its core. As shown by the t-s and vertical distribution plots, maximum temperatures for the different areas vary from 1 to 2°C, generally being about 1.68°C at 400 meters in the Amundsen Sea area, 1.45°C at 600 meters in the Cape Colbeck Area, and about 1.10°C at 500 meters in the Bellingshausen Sea area. Maximum salinities, ranging between 34.70 and 34.75‰, were found somewhat deeper, in the vicinity of 800 meters. Minimum oxygen values were slightly greater than 4.00 ml/l at about the same depth as maximum temperatures. Between 500 meters and bottom, little change in observed physical and chemical properties existed on all the stations occupied. Representative station profiles in Figure 24 show that between 500 and 3,000 meters temperature decrease did not exceed 1.2°C, salinity decrease was less than 0.1‰, and oxygen increase was less than 0.75 ml/l.

Considering Antarctic Bottom Water to have temperature and salinity values less than 0.5°C and 34.7‰, respectively, Figure 24 does not indicate Bottom Water in these areas; however, these conditions were observed on some stations around 3,000 meters, and below.

F. Antarctic Convergence

1. General

The Antarctic Convergence is considered as the zone where the cold and more dense surface water to the Antarctic region sinks below the warmer and less dense surface water of the north. This zone is marked usually by a sharp north-south

decrease in the surface water temperature of 1 to 3°C (2 to 6°F). At greater depths, sinking water mixes with adjacent water and eventually spreads to the north as the Antarctic Intermediate Water.

Continuous surface temperature measurements and BT observations were made across the Antarctic Convergence. Five oceanographic stations were occupied along a northwest-southeast line in the vicinity of the Antarctic Convergence. The northernmost station, station 33, was located at 57°19'S, 152°27'W, just south of the Convergence, and the southernmost station, at 59°19'S, 147°33'W. A continuous temperature trace was tabulated, and temperature values in the Convergence Zone are presented in Table 2. Cross sections of temperature, salinity, sigma-t, and oxygen are shown in Figure 25.

2. Continuous Surface Temperature Data

Table 2 presents changes in temperature across the Convergence, as measured by a resistance bulb thermometer. A surface temperature of 7.8°C (46.0°F) was observed 22 January 1961 at 0900Z. At 1930Z, with the ship traveling approximately 14 knots, temperature decreased to 4.4°C (39.9°F). At 2200Z and 57°19'S, 152°27'W, the location of station 33, and south to station 36 (Fig. 25), temperature continued to decrease and then increased slightly between stations 36 and 37 from 1.7 to 2.1°C.

TABLE 2. SURFACE TEMPERATURE OBSERVATIONS

Time (GMT)	Temperature (°C)	(°F)	Position
0900	7.8	46.0	
0935	7.5	45.5	56°02'S, 155°47'W
0950	6.7	44.1	
1030	5.8	42.5	
1100	5.6	42.1	
1930	4.4	39.9	
2200	3.7	38.7	57°19'S, 152°27'W

3. Oceanographic Station Section

Temperature decreased rapidly from surface to a depth of 100 to 200 meters along the entire profile. Below this layer, temperature increased on the northern

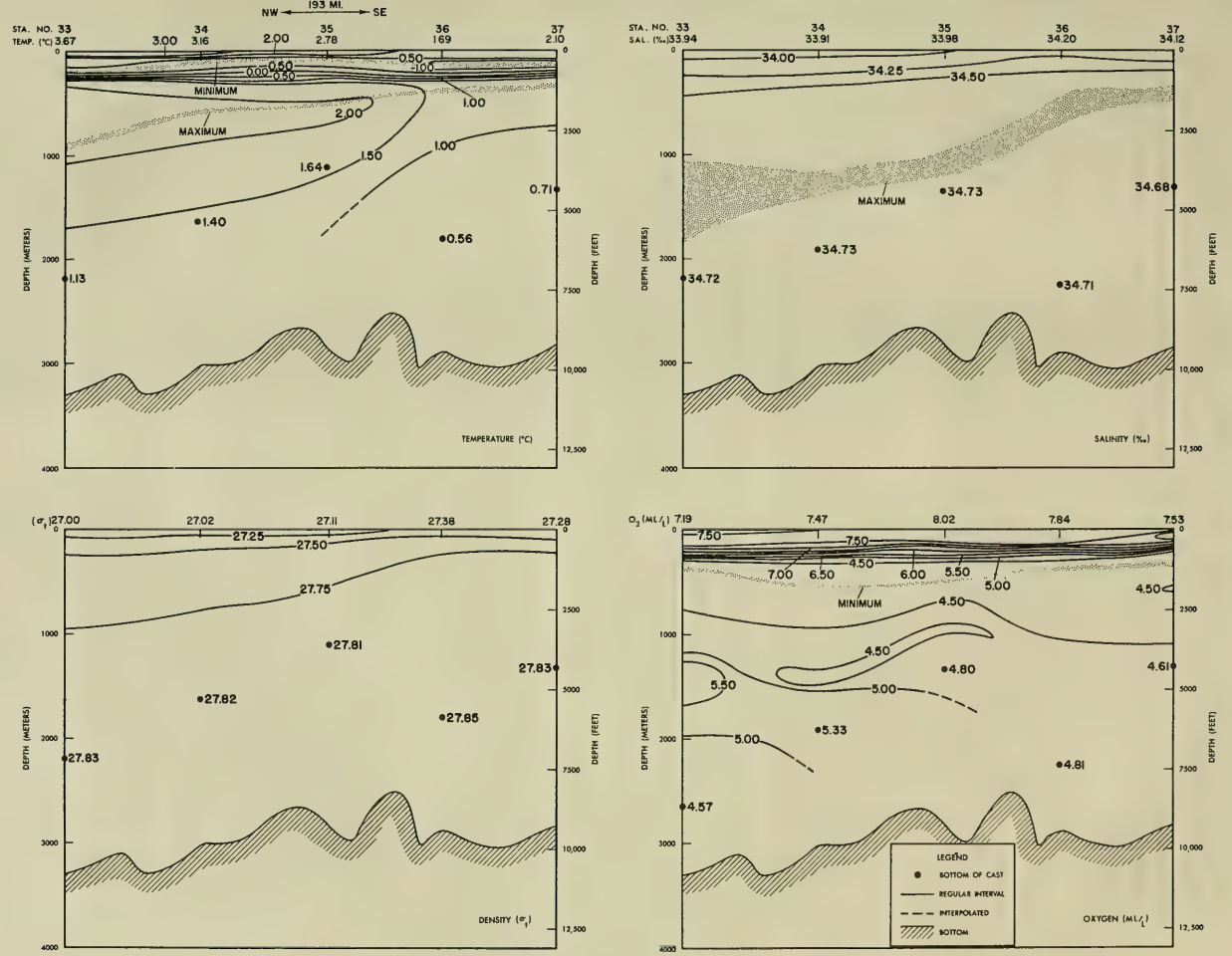


FIGURE 25. VERTICAL DISTRIBUTION OF TEMPERATURE, SALINITY, SIGMA-T, AND DISSOLVED OXYGEN, PACIFIC-ANTARCTIC CONVERGENCE ZONE

two-thirds of the profile to above 2.0°C, as a band of Upper Deep Water, which increased in thickness toward the north. Lower Deep Water underlay this portion of the section. On the southern one-third of the section, below the surface layer, temperature increased to just over 1.00°C at 400 meters and then decreased toward bottom.

Salinity generally increased from north to south at the surface and also with depth. A broad band of salinity maxima, with values above 34.70‰, appeared to rise toward the surface from depths of 1,000 to 1,900 meters at the northern station to a depth of approximately 400 meters at the southern stations. Below this band of maximum salinity, salinity values decreased to the bottom, with the bottom values lower to the south.

The sigma-t surfaces sloped upward to the south with the steepest slope on the northern two-thirds of the profile. The 27.75 isopycnal closely followed the observed maximum temperature layer. This isopycnal is located below 900 meters at station 33 and rises to a depth of 200 meters at stations 36 and 37.

Surface oxygen values all were above 7 ml/l but less than 8 ml/l, except for station 35 with an observed value just over 8 ml/l. The amount of oxygen present decreased rapidly to a value of 4.50 ml/l at 300 meters at all stations. A band of oxygen minimum existed to a depth of about 400 to 500 meters, below which values increased with the greatest increase to the north to approximately 2,000 meters.

4. Summary

The zone of convergence is located north of the profile presented. Work by Midttun and Natvig (1957) in this area showed the Convergence to be located at about 56°25'S, along 150° west longitude during late January 1948.

Antarctic Upper Water was observed to extend from the surface to the vicinity of 200 meters, as shown in the temperature profile of Figure 25. A rapid transition into Upper Deep Water, on the northern two-thirds of the profile with temperatures of 2.0°C and above was observed. Below this, Lower Deep Water was found, which shoaled southward as Antarctic Circumpolar Water. The similarity of the vertical structure for station 37 and stations near the continental shelf in both the Amundsen Sea area and those farther south in the Ross Sea should be noted; it is indicative of the vast expanse of the Circumpolar Water. Bottom Water was not observed because of observational depth limitations attributed to bad weather.

The BRATEGG Expedition data (1947-1948) shows that the Upper Deep Water extends approximately 150 miles south of the Convergence. In Figure 25, the

Upper Deep Water was present to about 125 miles south of station 33. At station 33, surface temperature was 3.67°C. Approximately 35 miles northwest (1930Z), the surface temperature was 4.4°C. Since a corresponding increase was noted approximately 120 miles to the northwest (1100Z), it is suggested the Convergence was less than 50 miles north of station 33.

III. BATHYMETRY OF THE SOUTH SANDWICH TRENCH

During DEEP FREEZE 1961 operations, GLACIER obtained three sonic depth profiles across the South Sandwich Trench, in the vicinity of METEOR DEEP. Profiles were recorded with an AN/UQN-1B echo sounder. Noise level resulting from high seas reduced the clarity of the record to such an extent that depths could be scaled only to the nearest 50 fathoms. Navigational errors were small when radar was used. When navigation was by celestial fix or dead reckoning errors of 5 miles or greater were encountered. Velocity corrections were applied to all soundings to bring them to the same datum as the METEOR soundings.

The South Sandwich Islands, emergent parts of the Scotia Ridge, are portions of a Pacific-type island arc system extending from the tip of South America to Antarctica. The South Sandwich Trench lies along the convex side of this arc from South Georgia Island to near the South Orkney Islands. The location of the southern extent of the trench is somewhat doubtful because of the paucity of sounding data in the area. Figure 26 is a general bathymetric chart of the southwestern Atlantic Ocean, showing suggested topographic and geographic relationships between the South Sandwich Trench and the surrounding topographic features.

Data presented in Figure 26 and a survey of literature (Jacobs, et al, 1958 and Guilcher 1958) indicate that the South Sandwich Trench is an arcuate Trench, the outer convex feature of a primary arc. This arc and others similar to it in plan, but varying in complexity of structure, constitute the great continental fracture system - two major orogenic belts which encircle the earth in a scalloped linear pattern. The South Sandwich Islands chain is a good example of an active primary island arc. This arc differs from other arcs in the system in that it is reversed in orientation to the adjacent arcs of the Chilean Cordillera and Palmer Peninsula of Antarctica. An analogous structure of this type is the reversed arc of the Lesser Antilles Islands.

In both the Lesser Antilles and the South Sandwich Islands, great transcurrent faults extend in an east-west direction for a considerable distance from the ends of the island arc to the main orogenic belt. A corresponding gap equal in length to the island arcs is left in the fracture system (Fig. 26). Similar topographic alignment occurs along the transcurrent fault zones of the Lesser Antilles structure, with Cuba and the Greater Antilles forming the northern boundary and the north coast of Venezuela the southern boundary.

The arrows in Figure 26 show the probable direction of movement of the earth's crust along the topographic alignment of the South Sandwich Trench. Earthquakes and active volcanism throughout these zones indicate that movement might still be

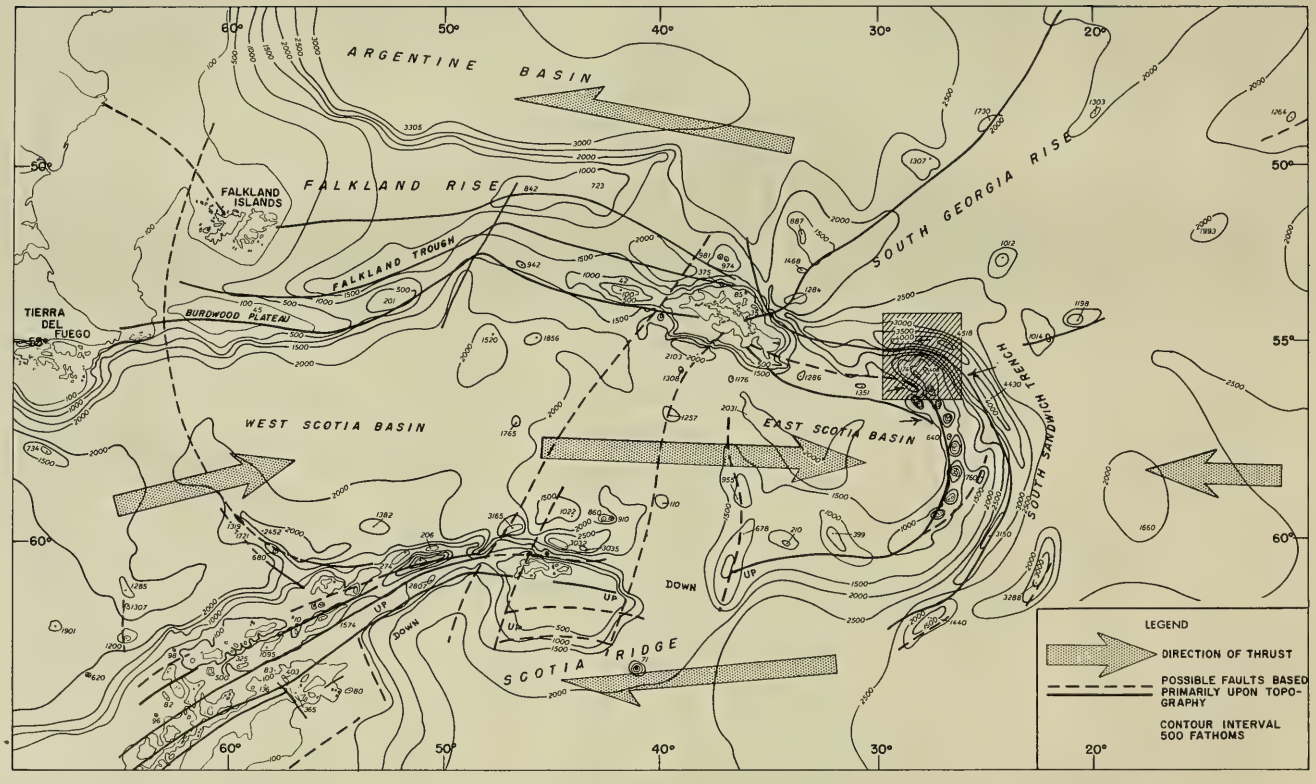


FIGURE 26. BATHYMETRIC AND DYNAMIC CHART OF THE SOUTH SANDWICH ISLANDS AREA, SOUTH ATLANTIC OCEAN

taking place. The South Sandwich Trench and the adjacent island volcanoes may be a result of thrust faulting and folding by lateral compressive forces, a surface expression of deep-seated movement within the earth's mantle.

The area of confluence of one of the two east-west shear zones and the island-trench compressional zone are shown in Figure 27 (Inset Fig. 26). In addition to an interpretation of detailed bathymetry, this figure shows the tracks of GLACIER over the trench.

The floor of the South Sandwich Trench is 15 to 30 miles wide and has a mountainous bottom topography. Many trenches have narrow widths and relatively featureless bottoms composed of great thicknesses of sediments derived from nearby volcanic islands. The topographic expression in the South Sandwich Trench suggests the possibility of block-faulting, resulting from lateral thrust. An alternative explanation for the hummocky nature and great width of the floor follows: The floor of the trench in recent geologic time was much deeper than at present, perhaps nearly 5,000 fathoms deep. The floor then had the narrow, V-shaped or rounded profile typical of many other deep trenches. The inner wall of the trench (Fig. 27) was weakened by movement along the east-west shear zone that extends from this wall back through South Georgia Island to Cape Horn. A massive slab of this steep trench wall slid down into the bottom, largely filling it. By this explanation, the non-linear hummocks depicted by the profiles on Figures 28 and 29 would be the result of debris from an extensive landslide which originated on the south wall and perhaps was triggered by an earthquake. Figure 29 shows profile A-B with no vertical exaggeration; the dotted line is the suggested pre-landslide profile.

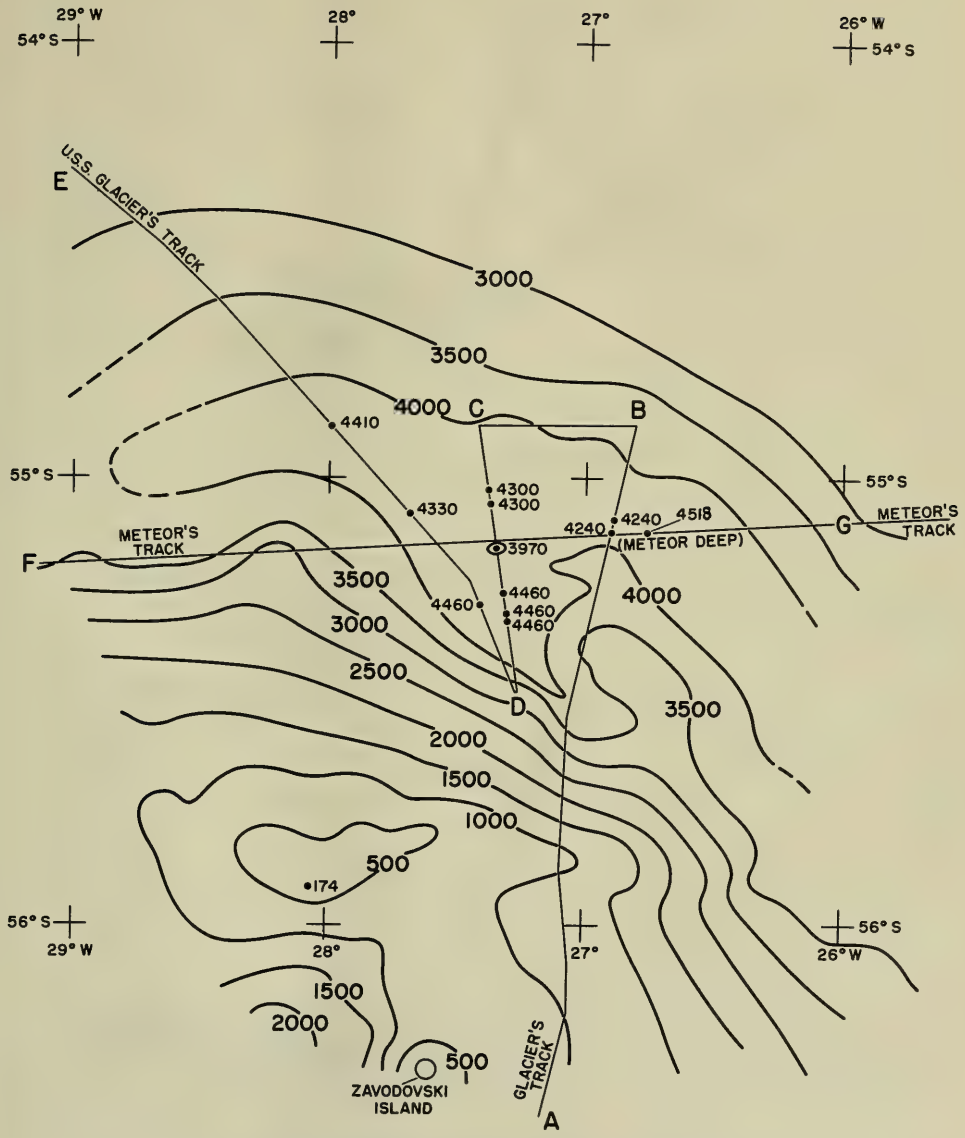
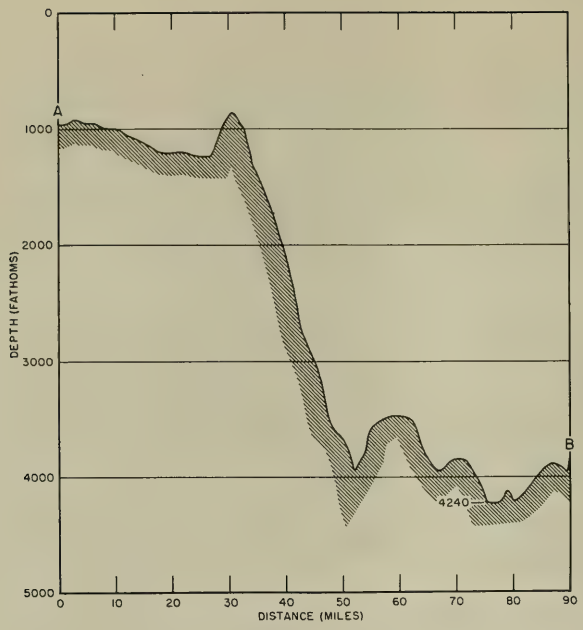


FIGURE 27. BATHYMETRY AND SHIP SOUNDING TRACKS, SOUTH SANDWICH ISLANDS AREA



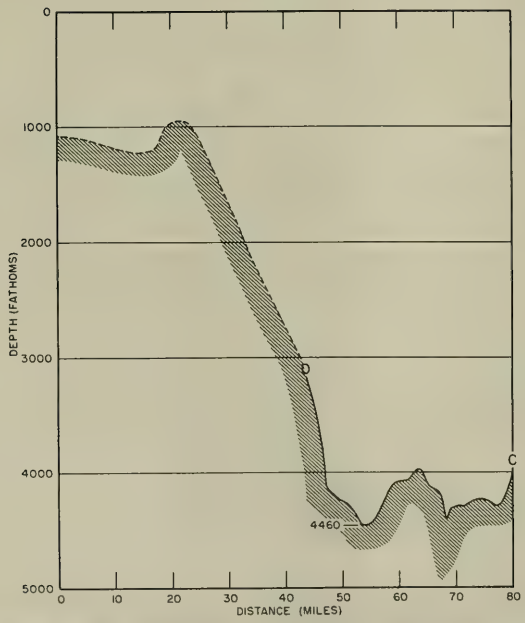
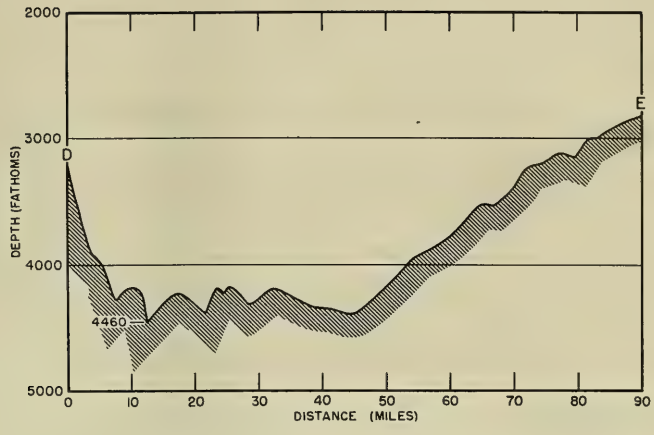
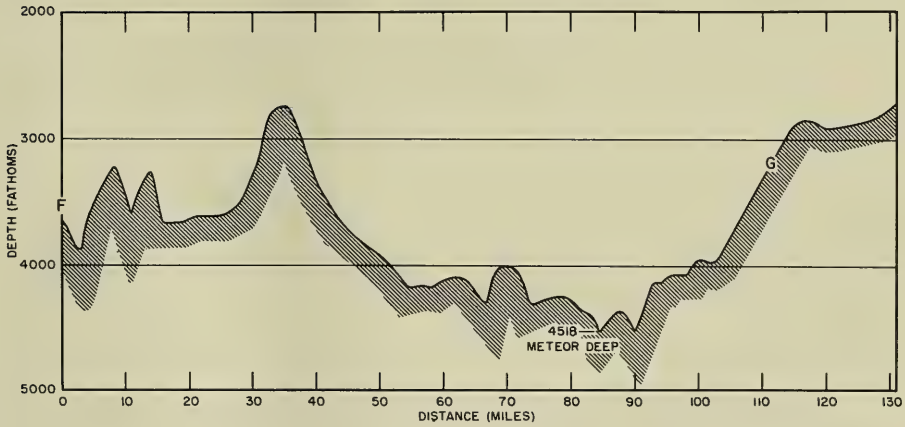


FIGURE 28. BATHYMETRIC SECTIONS, TRACKS A-B AND C-D





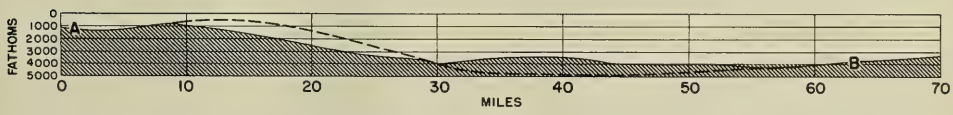


FIGURE 29. BATHYMETRIC SECTIONS, TRACKS D-E, F-G, AND POSSIBLE MOVEMENT ALONG TRACK A-B

IV. GEOMAGNETISM

A. Summary of Operations

The program of geomagnetic measurements aboard STATEN ISLAND during DEEP FREEZE 61 was the first extensive shipborne investigation of the earth's magnetic field made in Antarctic waters by the United States. Approximately 22,000 miles of continuous total magnetic intensity profiles were recorded for the entire cruise. Of these, approximately 11,500 track miles were recorded south of New Zealand. Ship positions were determined by celestial navigation and dead reckoning. Errors in position were estimated to range from approximately 5 nautical miles to perhaps as much as 50 nautical miles under the most adverse conditions. A brief discussion of significant findings from the Antarctic portion of the cruise is presented in this report. Data from other portions of the cruise are presented in profile or tabular form.

B. Compilation of Data

Total intensity data were scaled and converted to values in gammas (1 gamma = 10^{-5} oersted); no corrections for diurnal variation were made. Profiles of data south of 45°S, corrected for regional gradient, were plotted along the ship's track as shown in Figures 30 and 31. Figure 32 presents comparative profiles of magnetic and bathymetric data measured simultaneously during a crossing of the Pacific - Antarctic Ridge. Total intensity values obtained on the cruise south of 45°S are compared in Figure 33 with total intensity values taken from H. O. Chart 1703S for the year 1955.

Measurements made while the ship was hove to at oceanographic stations, and short profiles recorded while in open channels in the ice are presented in Figures 34 through 39. Continuous measurements made during the transits north of 45°S are depicted as sections along the ship's tracks in Figure 40. Profiles were prepared for each section and are presented in Figures 41 through 53.

C. Discussion of Data

The objective of the geomagnetic program aboard STATEN ISLAND was to investigate the character of the earth's magnetic field in this largely unexplored region. It was anticipated that the magnetic data collected would yield new information concerning the composition and possible structure of upper layers of the earth's crust. As anticipated, examination of the data collected has revealed several quite significant characteristics. In addition, several new problems requiring further investigation have been found.

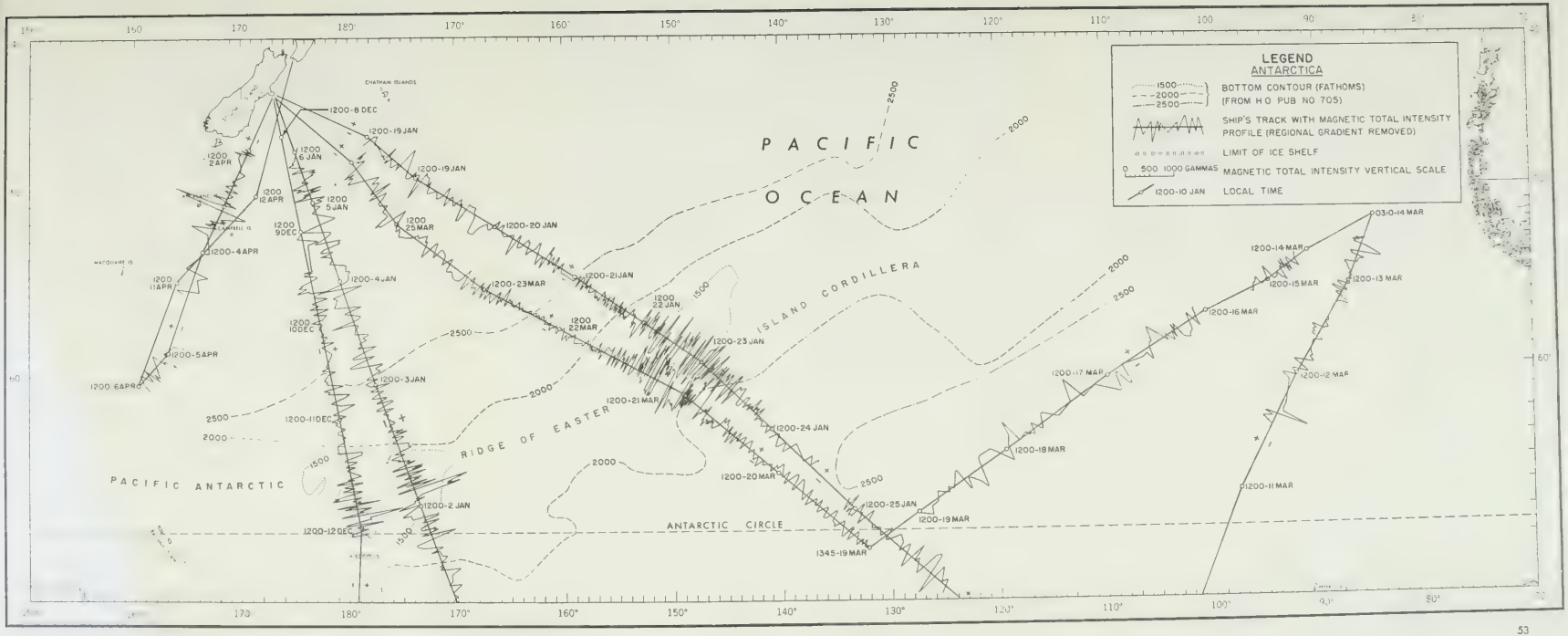


FIGURE 30. MAGNETIC TOTAL INTENSITY PROFILES ALONG STATEN ISLAND TRACKS, NORTHERN SECTION

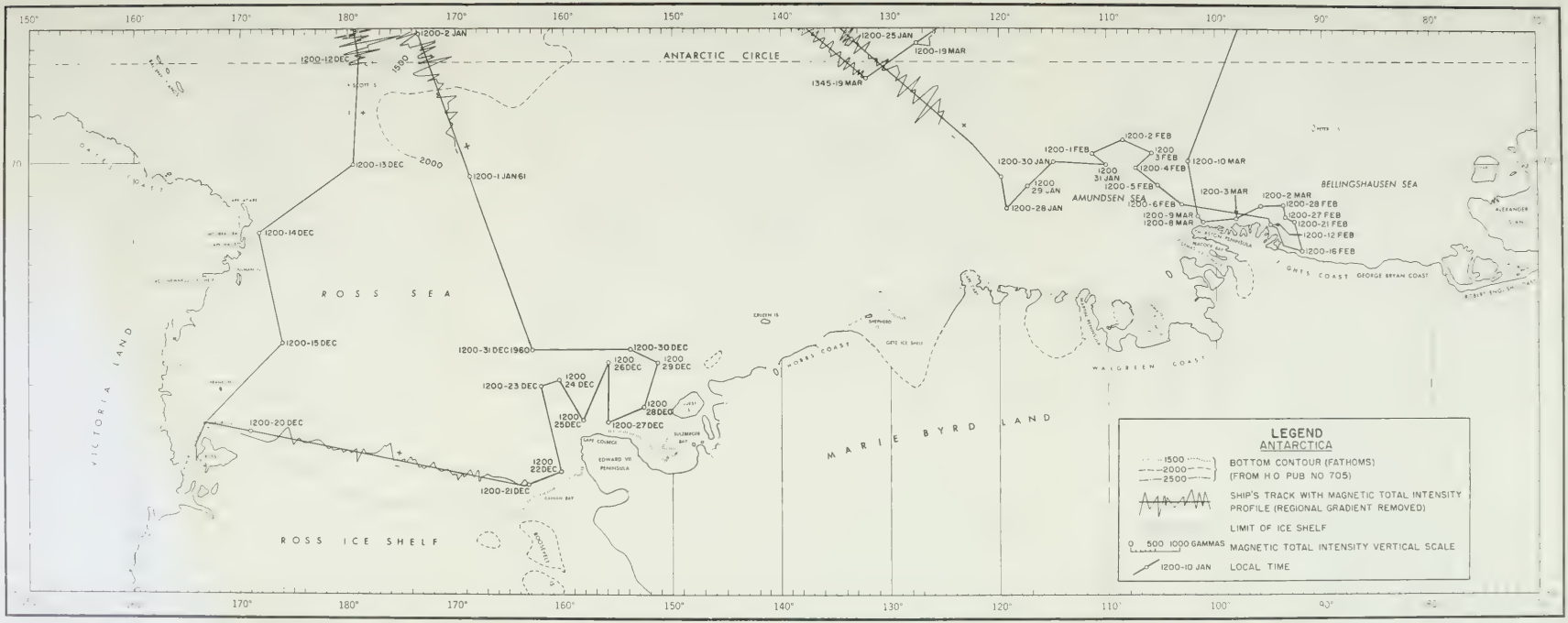


FIGURE 31. MAGNETIC TOTAL INTENSITY PROFILES ALONG STATEN ISLAND TRACKS, SOUTHERN SECTION

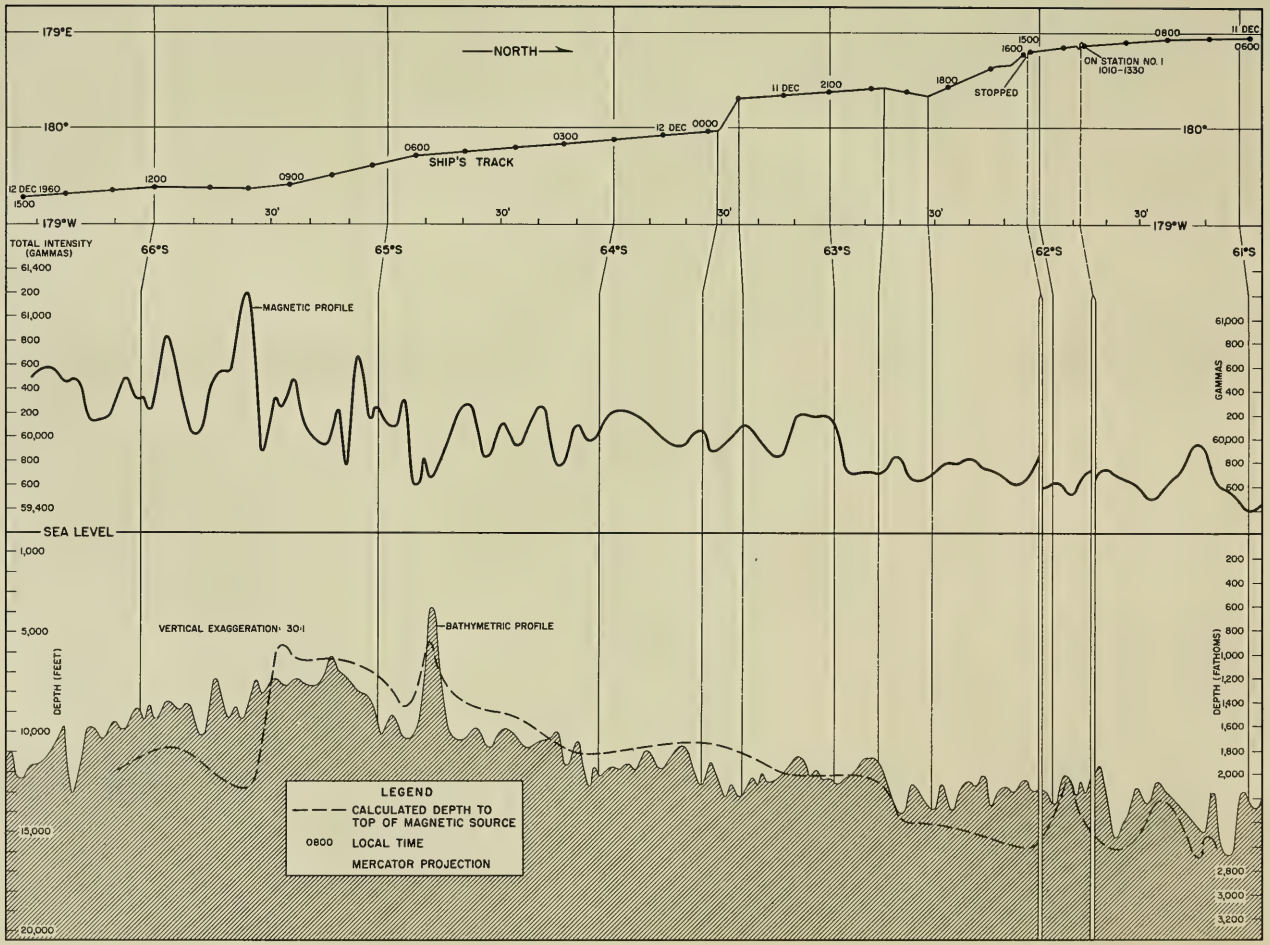
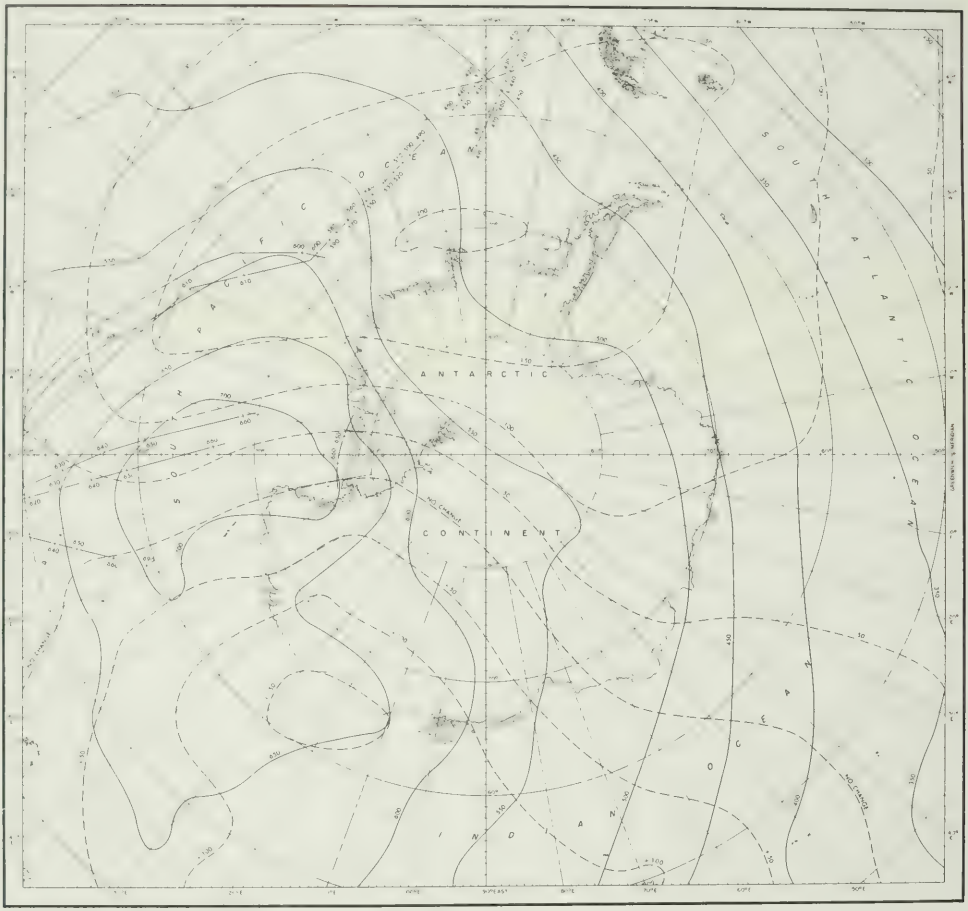


FIGURE 32. COMPARATIVE MAGNETIC-BATHYMETRIC PROFILES ACROSS PACIFIC-ANTARCTIC RIDGE



LEGEND

570	SHIP'S TRACK WITH SMOOTHED OBSERVED TOTAL MAGNETIC INTENSITY VALUES AT INTERVALS OF 0.01 OERSTED.
550	ISODYNAMIC LINES DENOTE TOTAL INTENSITY IN OERSTEDS, AS PORTRAYED ON CHART H. O. 1703S (1955).
+100	LINES INDICATE ANNUAL CHANGE IN TOTAL INTENSITY EXPRESSED IN GAMMAS (100,000 GAMMAS = 1 OERSTED, 1 GAMMA = .00001 OERSTED)

FIGURE 33. COMPARATIVE TOTAL INTENSITY CHART

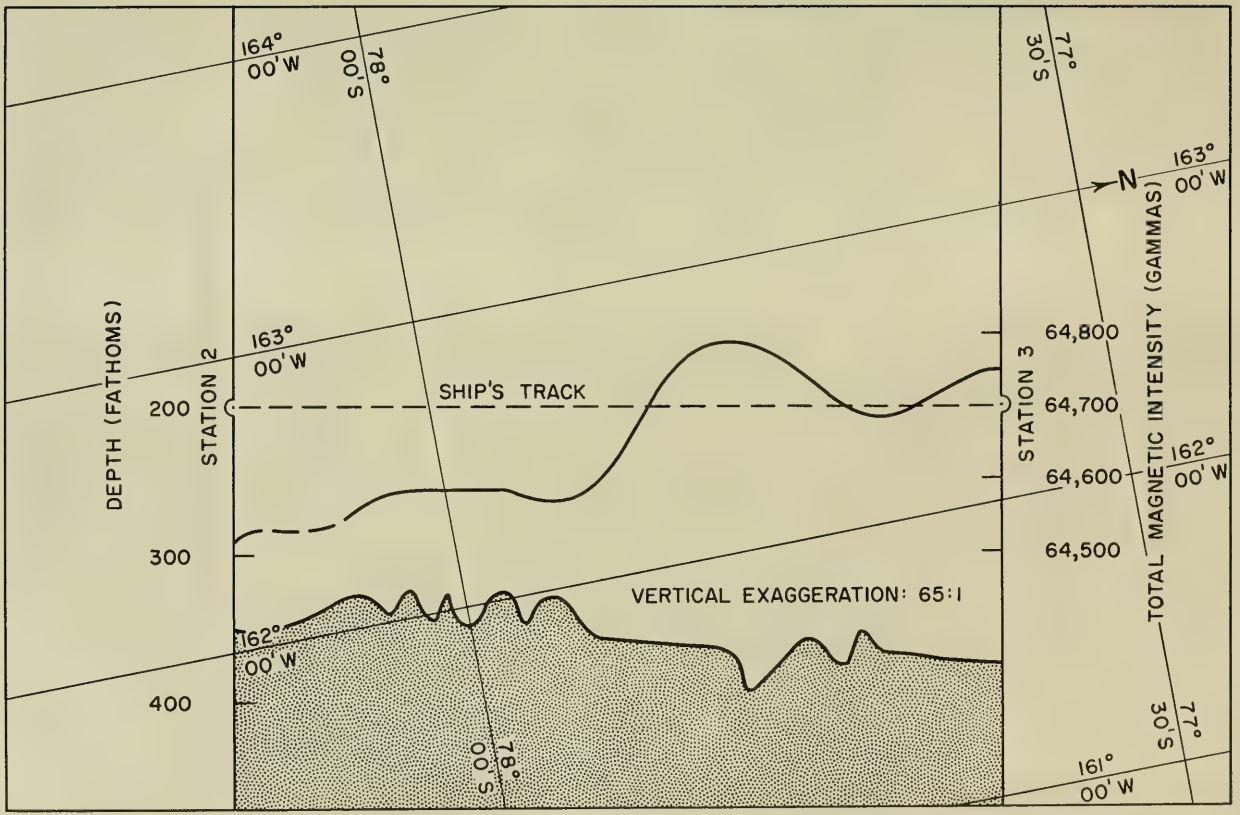


FIGURE 34. MAGNETIC INTENSITY AND BATHYMETRIC PROFILE BETWEEN OCEANOGRAPHIC STATIONS 2 AND 3

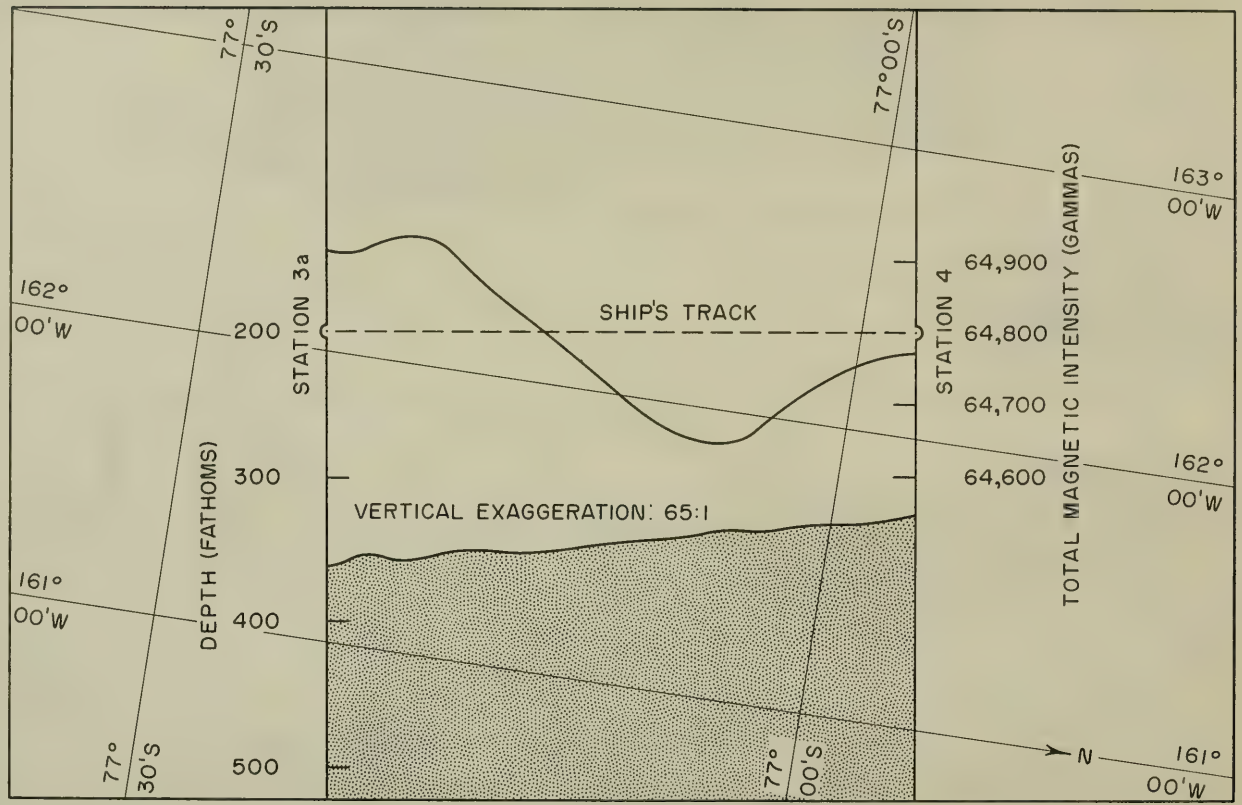


FIGURE 35. MAGNETIC INTENSITY AND BATHYMETRIC PROFILE BETWEEN OCEANOGRAPHIC STATIONS 3a AND 4

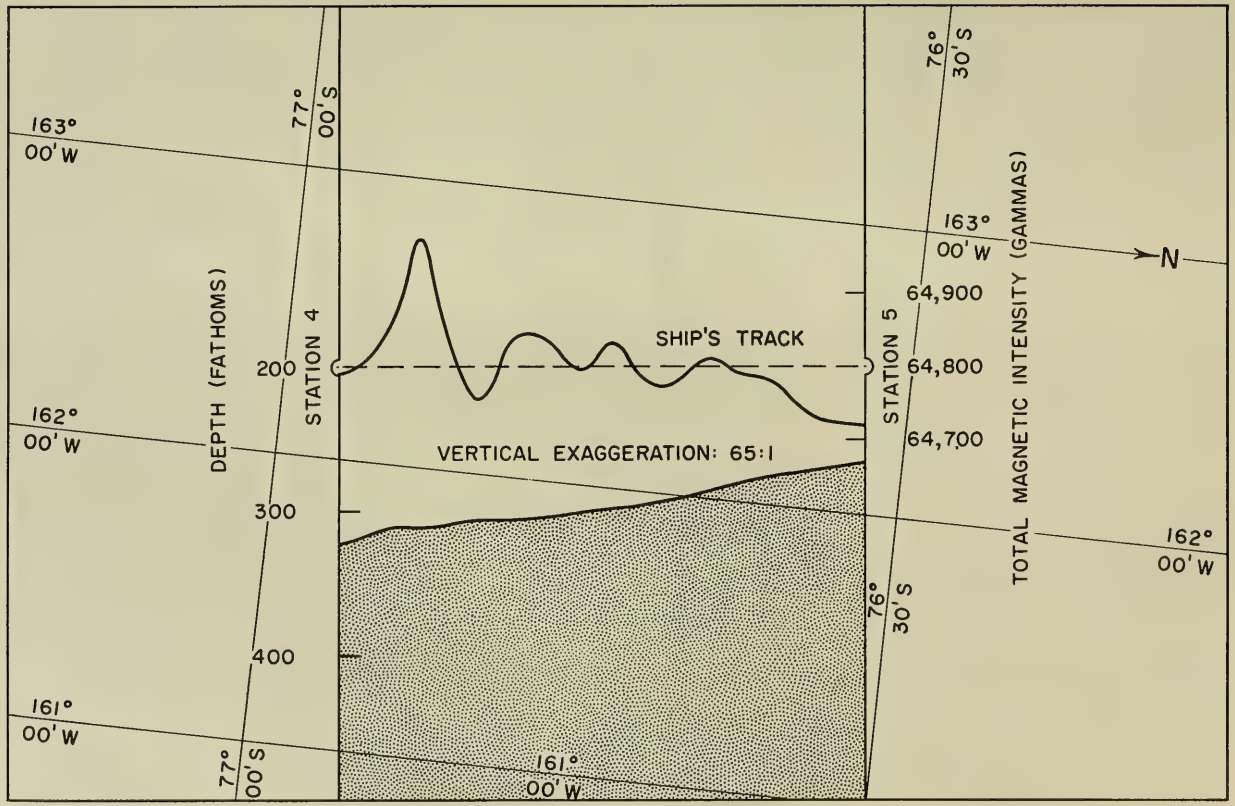


FIGURE 36. MAGNETIC INTENSITY AND BATHYMETRIC PROFILE BETWEEN OCEANOGRAPHIC STATIONS 4 AND 5

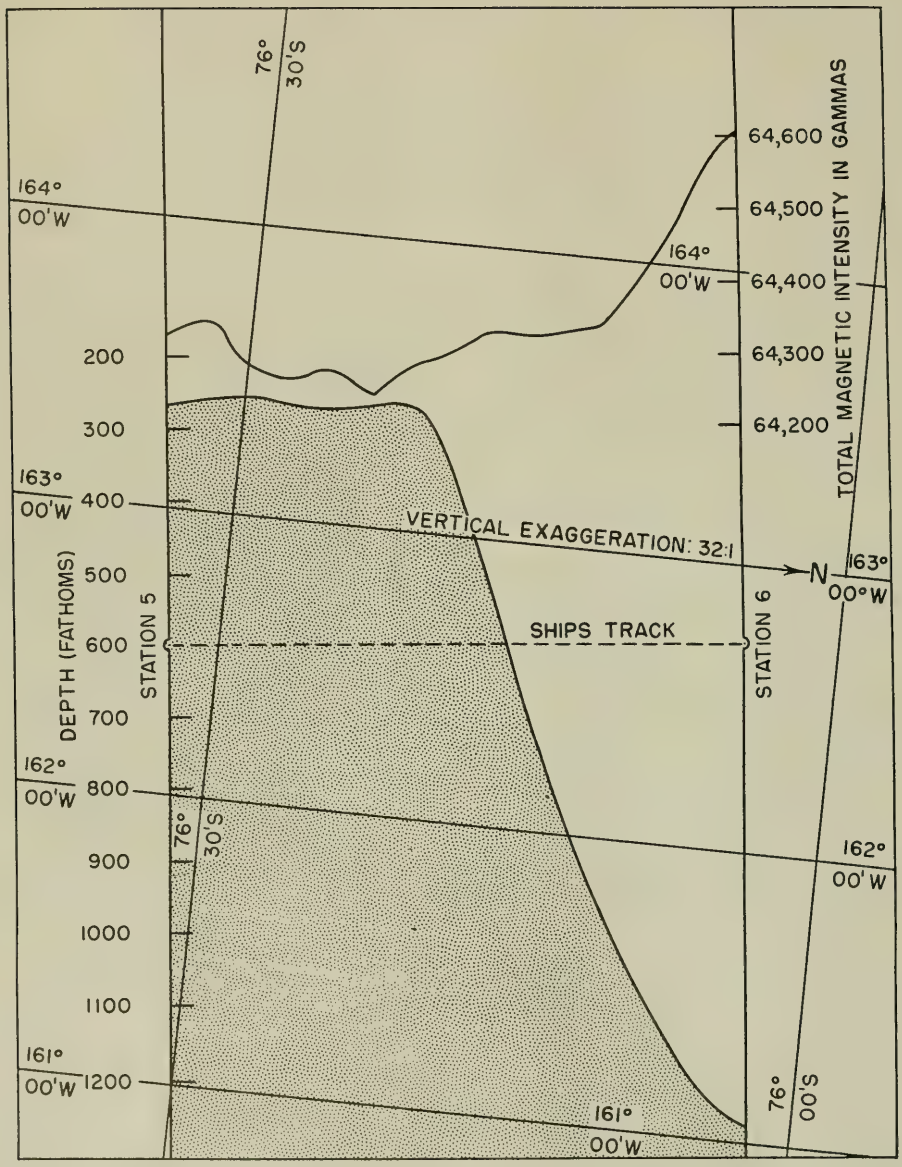


FIGURE 37. MAGNETIC INTENSITY AND BATHYMETRIC PROFILE BETWEEN OCEANOGRAPHIC STATIONS 5 AND 6

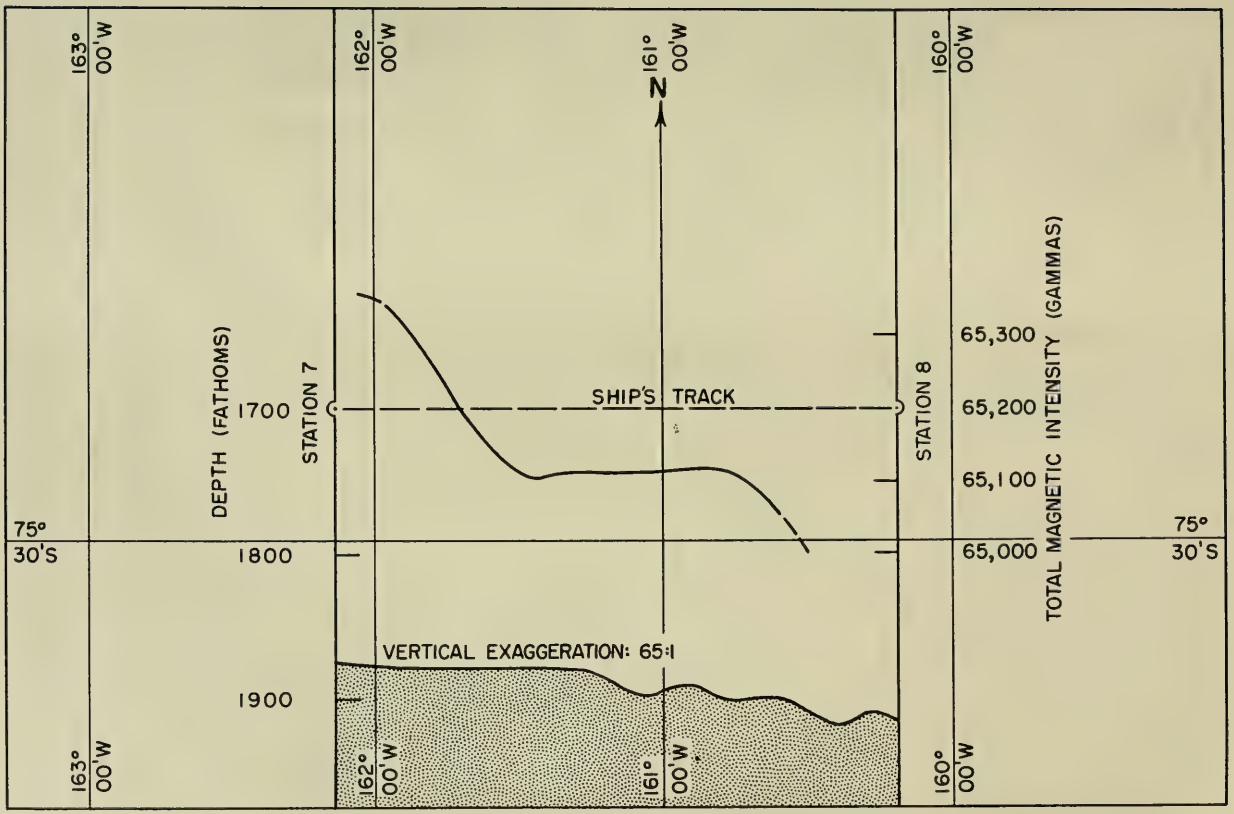


FIGURE 38. MAGNETIC INTENSITY AND BATHYMETRIC PROFILE BETWEEN OCEANOGRAPHIC STATIONS 7 AND 8

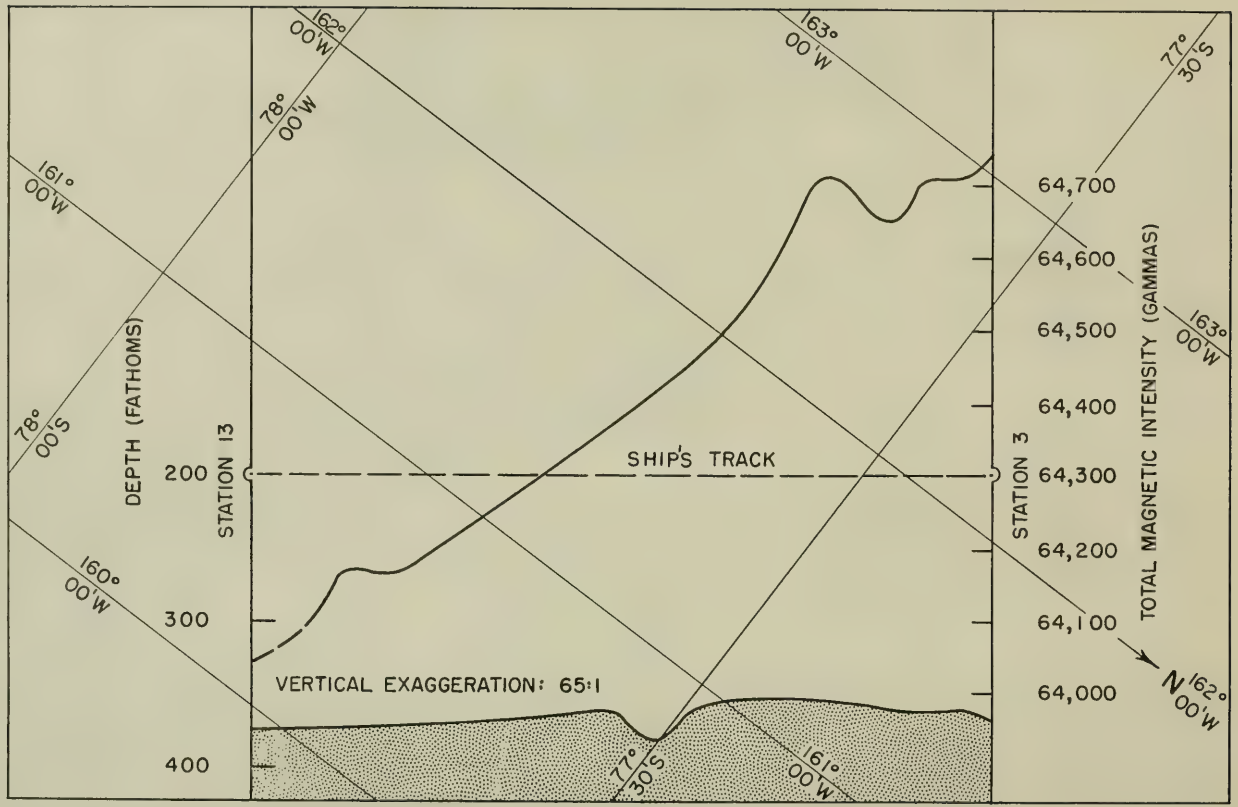


FIGURE 39. MAGNETIC INTENSITY AND BATHYMETRIC PROFILE BETWEEN OCEANOGRAPHIC STATIONS 3 AND 13

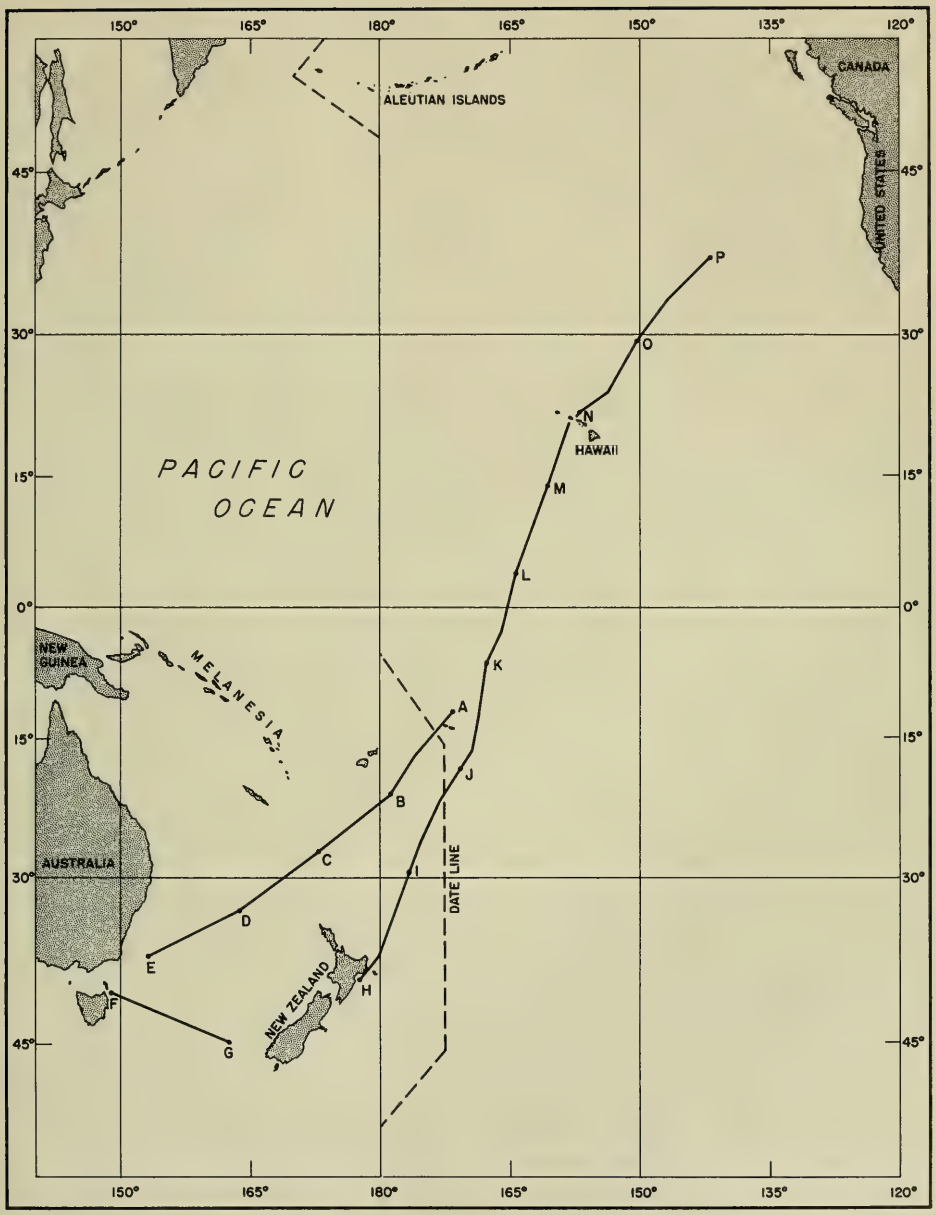


FIGURE 40. LOCATIONS OF MAGNETIC MEASUREMENT PROFILES ALONG STATEN ISLAND TRACKS NORTH OF 45°S

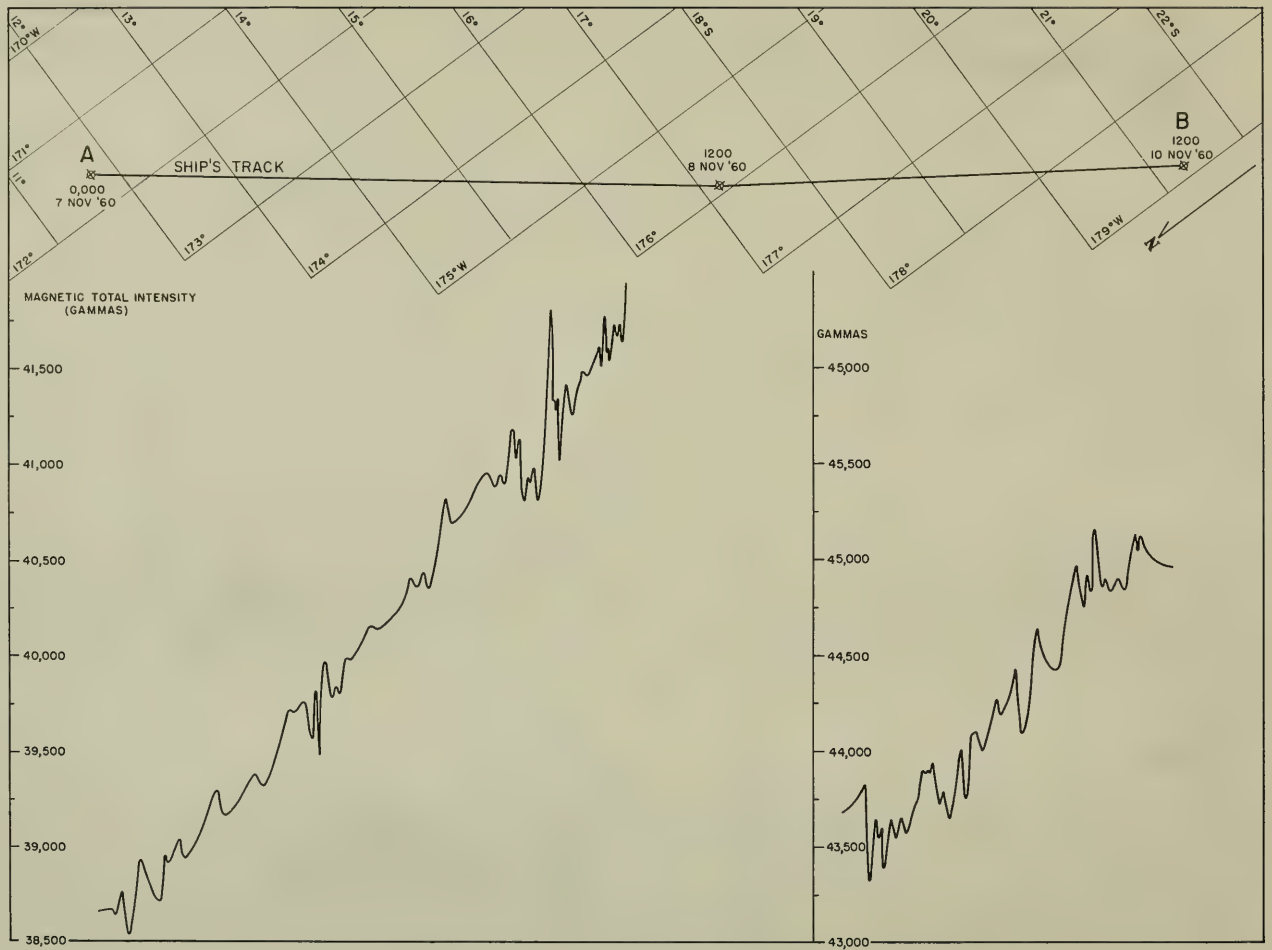


FIGURE 41. MAGNETIC TOTAL INTENSITY PROFILE, SECTION A-B

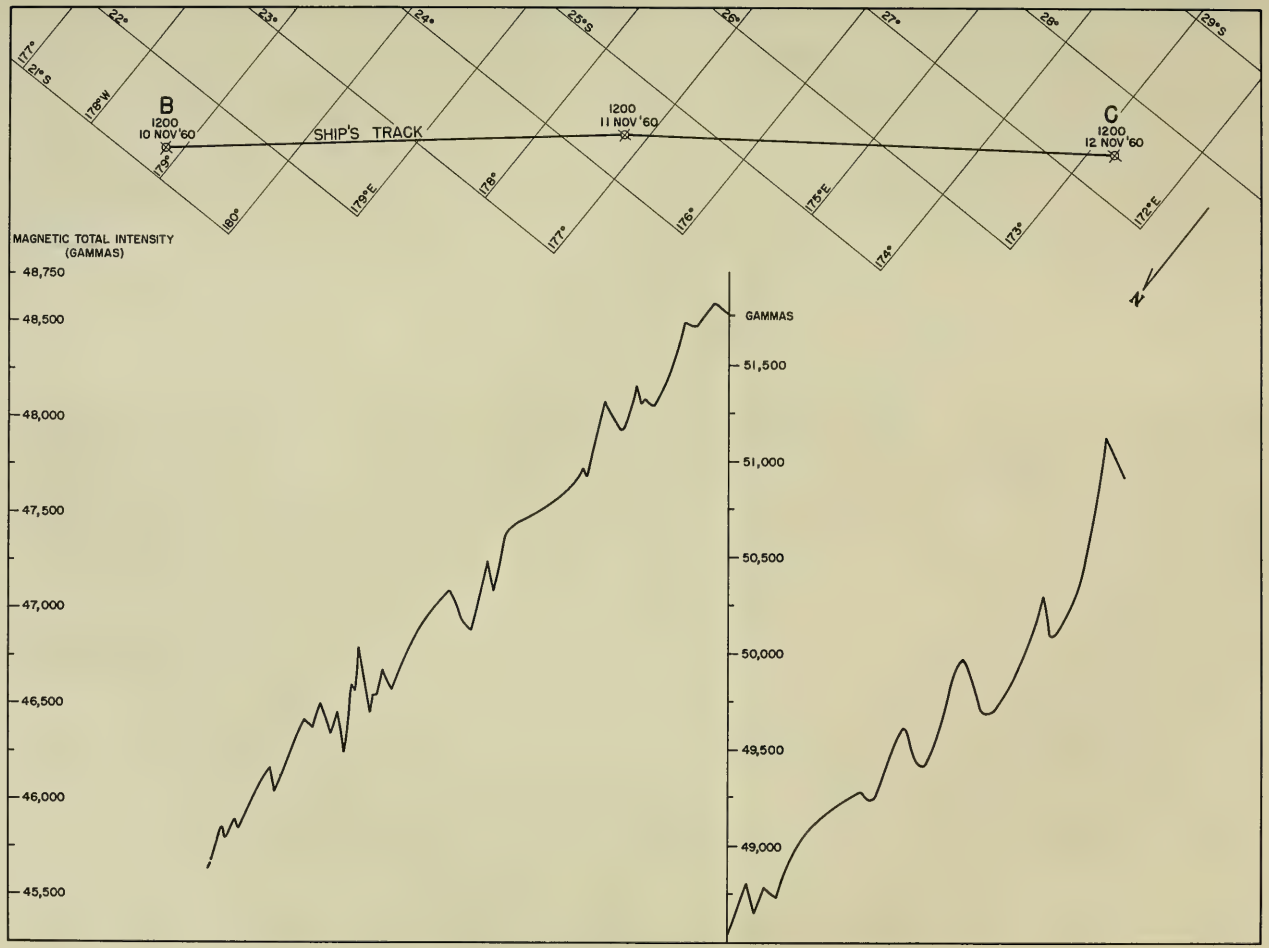


FIGURE 42. MAGNETIC TOTAL INTENSITY PROFILE, SECTION B-C

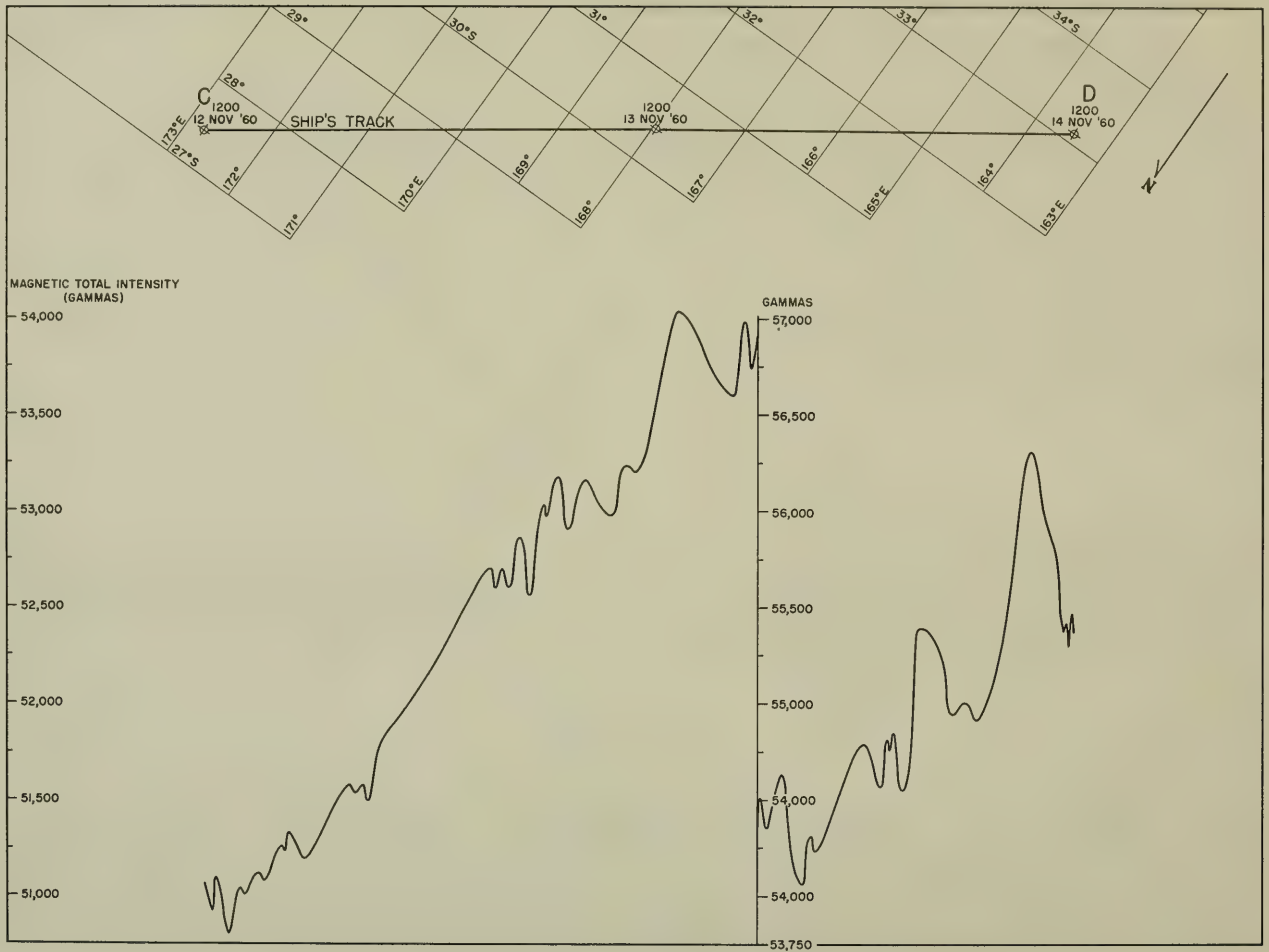


FIGURE 43. MAGNETIC TOTAL INTENSITY PROFILE, SECTION C-D

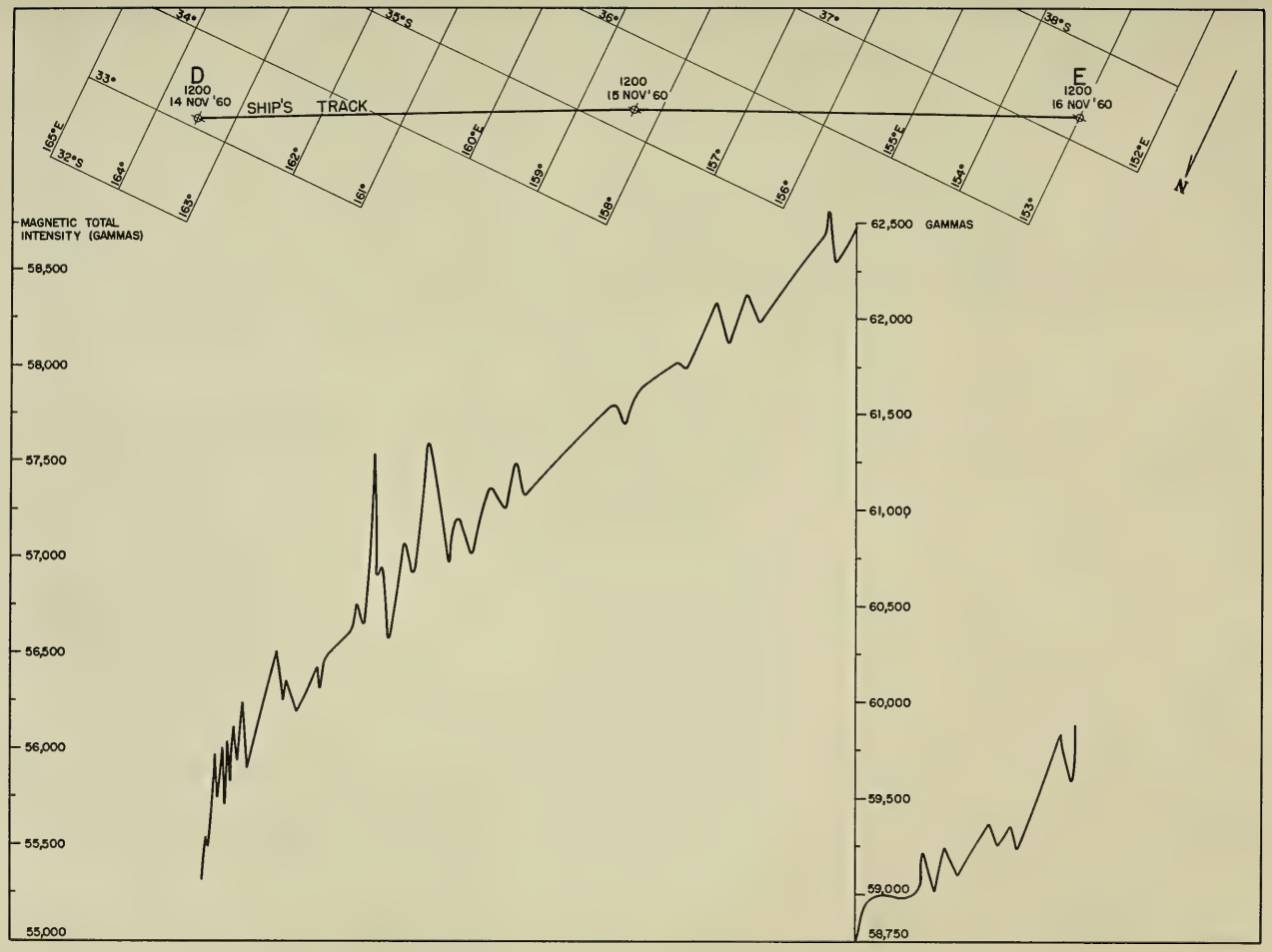


FIGURE 44. MAGNETIC TOTAL INTENSITY PROFILE, SECTION D-E

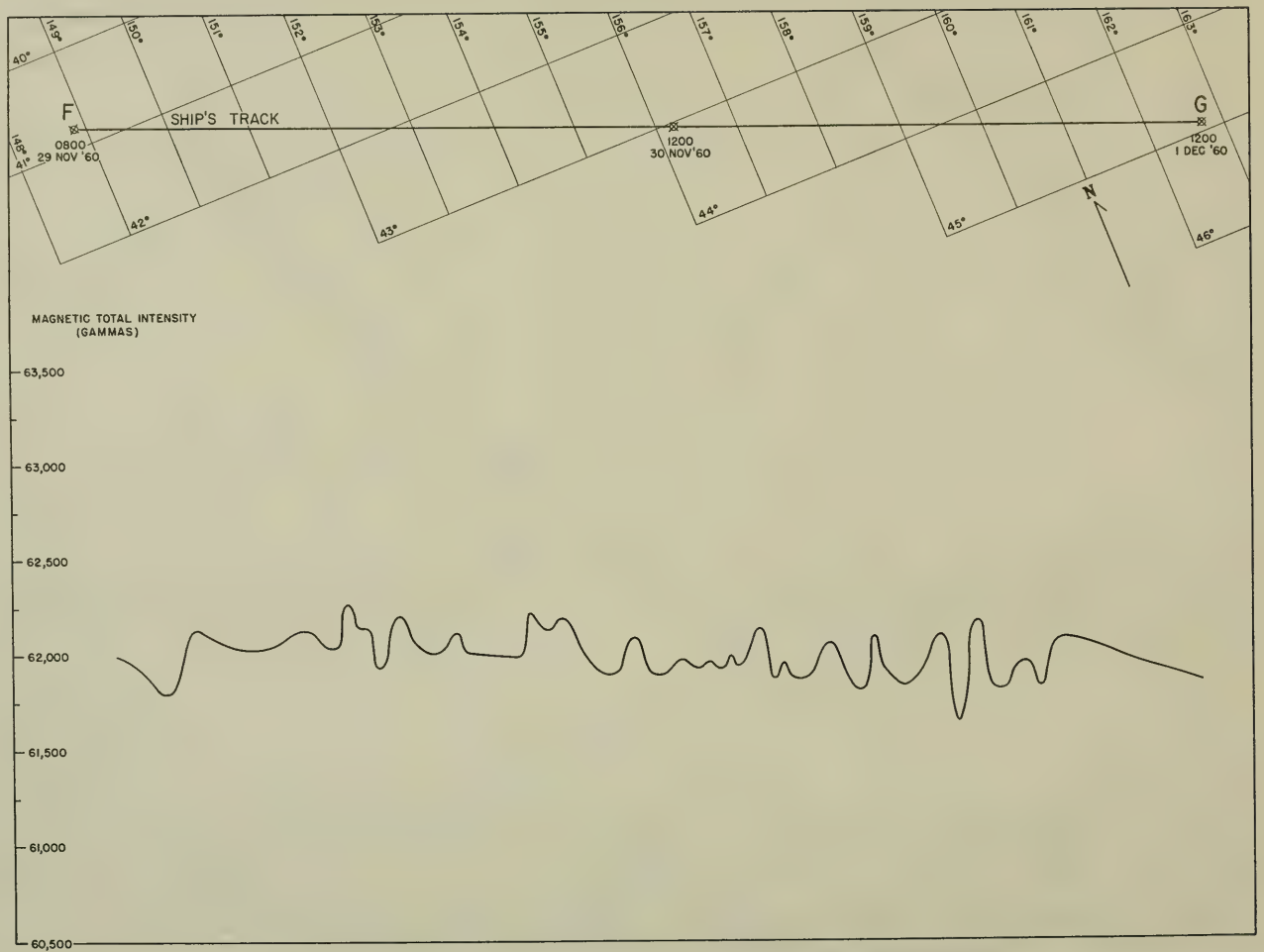


FIGURE 45. MAGNETIC TOTAL INTENSITY PROFILE, SECTION F-G

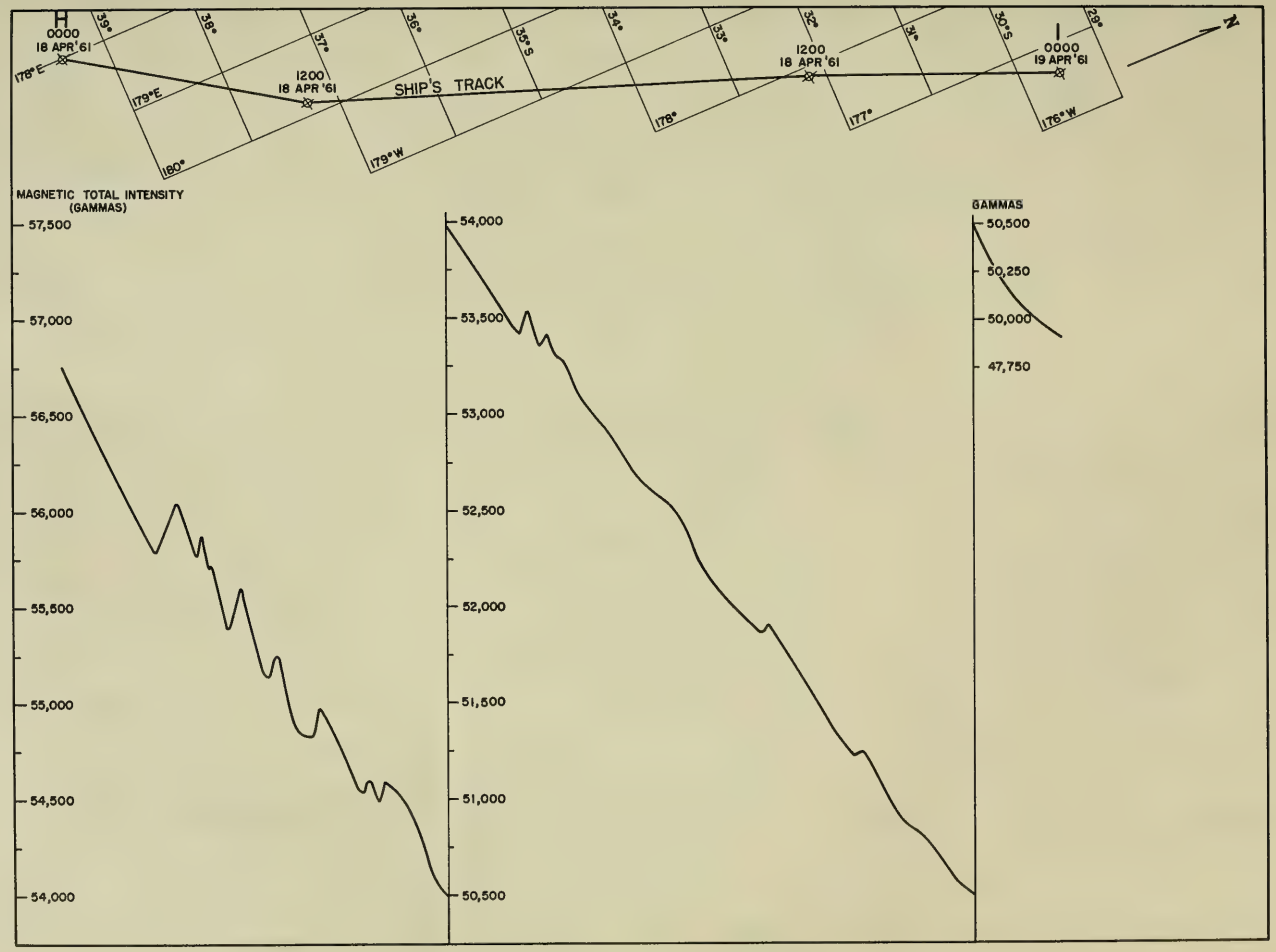


FIGURE 46. MAGNETIC TOTAL INTENSITY PROFILE, SECTION H-I

FIGURE 47. MAGNETIC TOTAL INTENSITY PROFILE, SECTION I-J

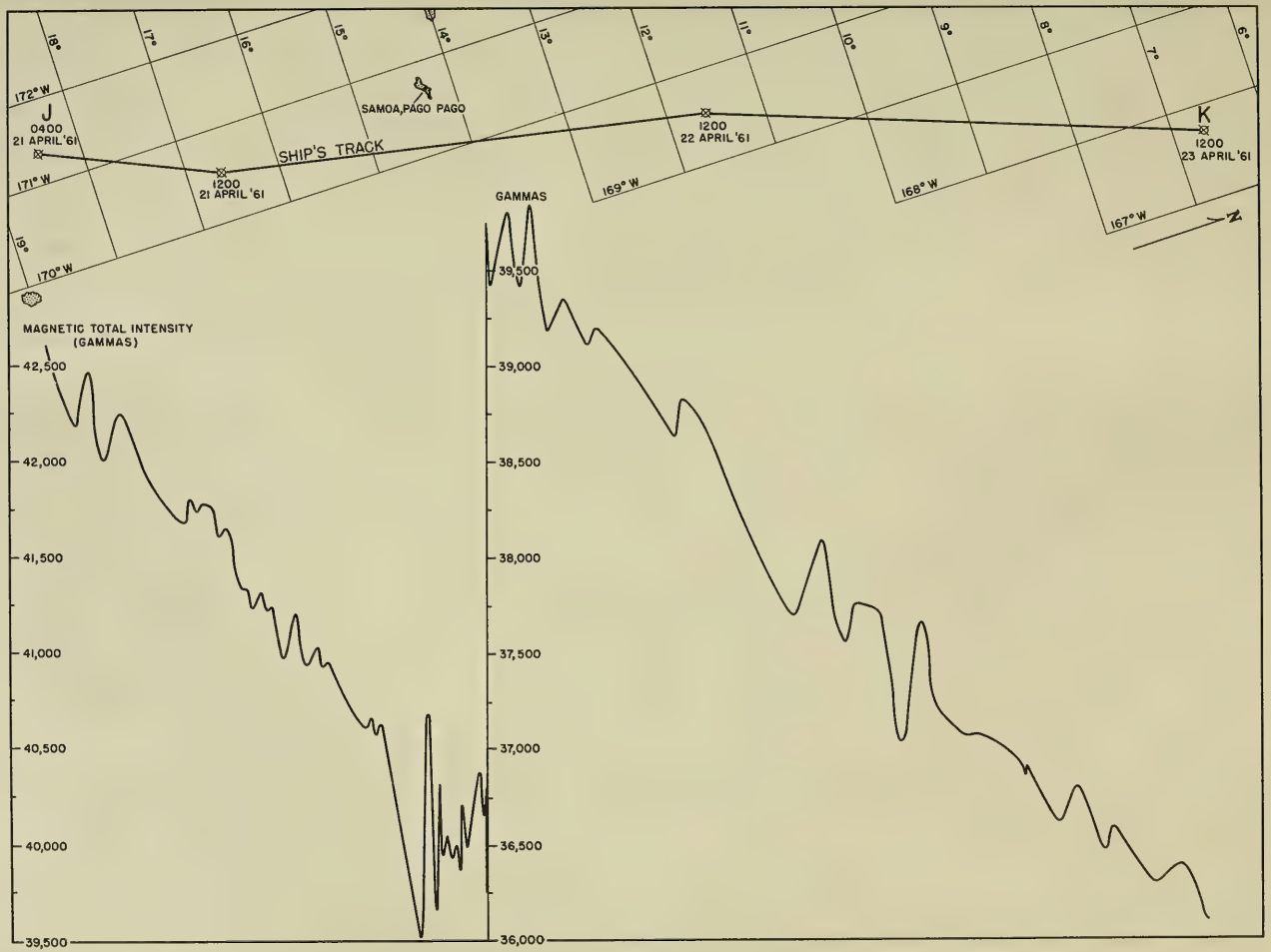


FIGURE 48. MAGNETIC TOTAL INTENSITY PROFILE, SECTION J-K

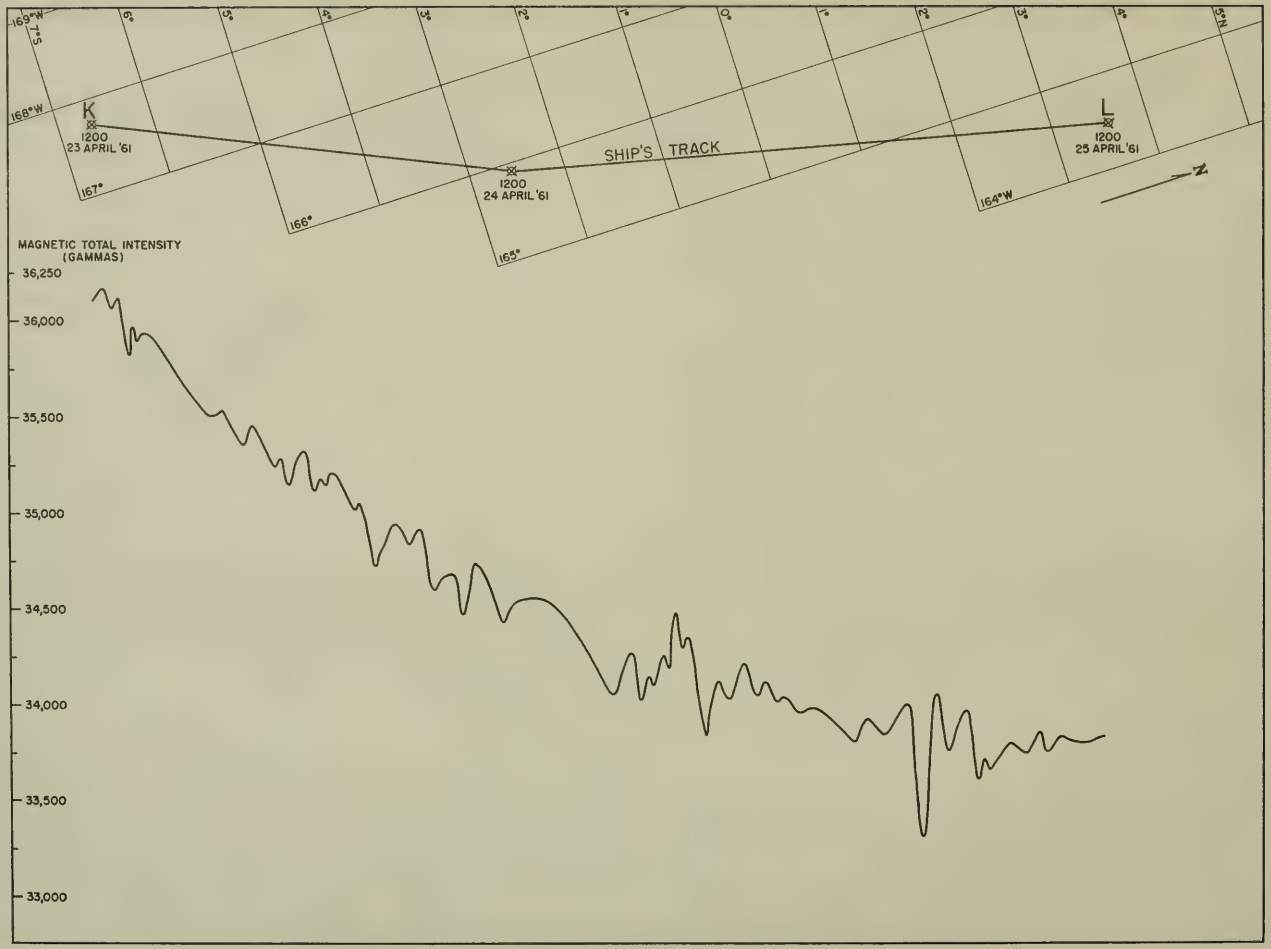


FIGURE 49. MAGNETIC TOTAL INTENSITY PROFILE, SECTION K-L

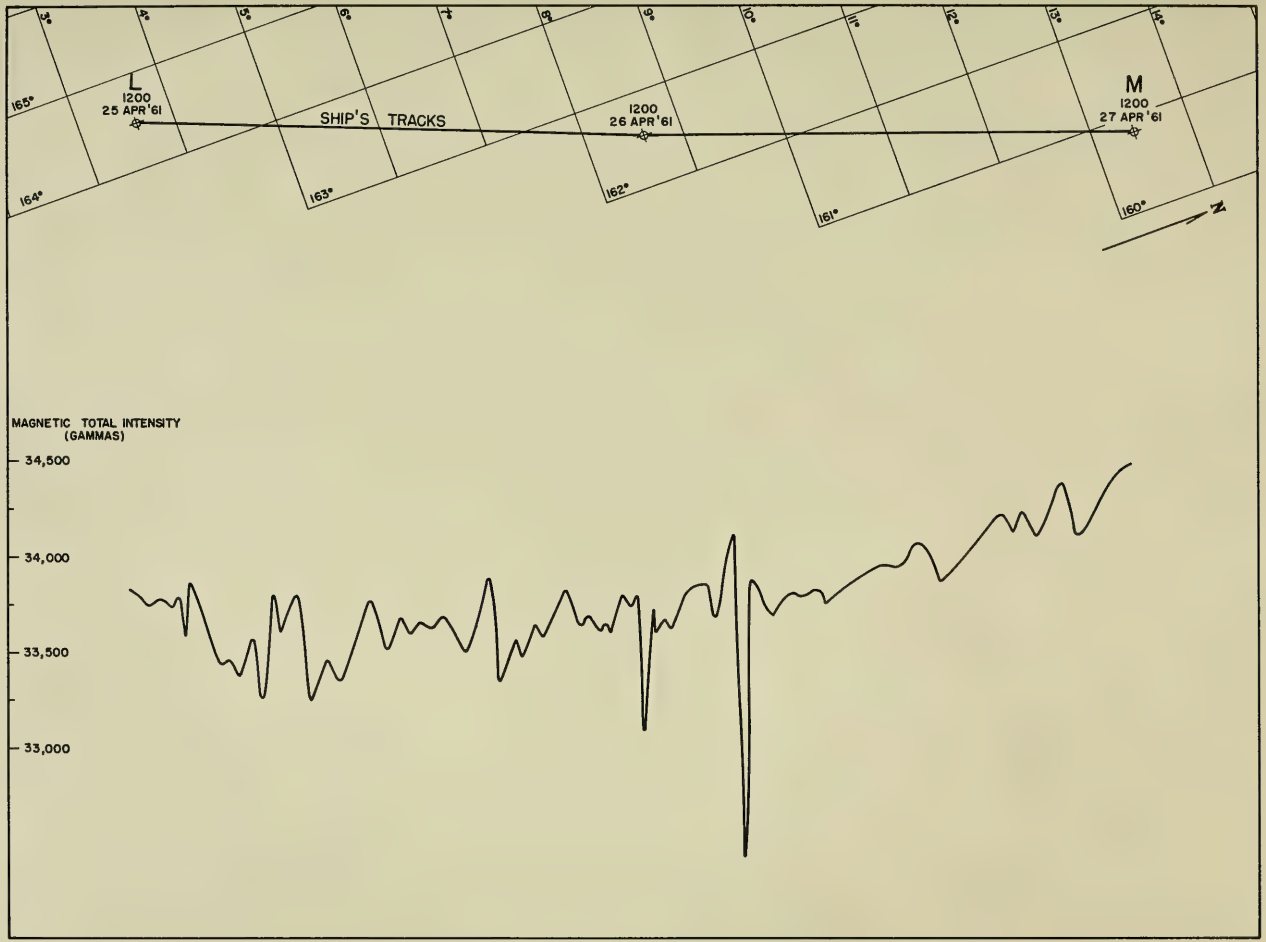


FIGURE 50. MAGNETIC TOTAL INTENSITY PROFILE, SECTION L-M

FIGURE 51. MAGNETIC TOTAL INTENSITY PROFILE, SECTION M-N

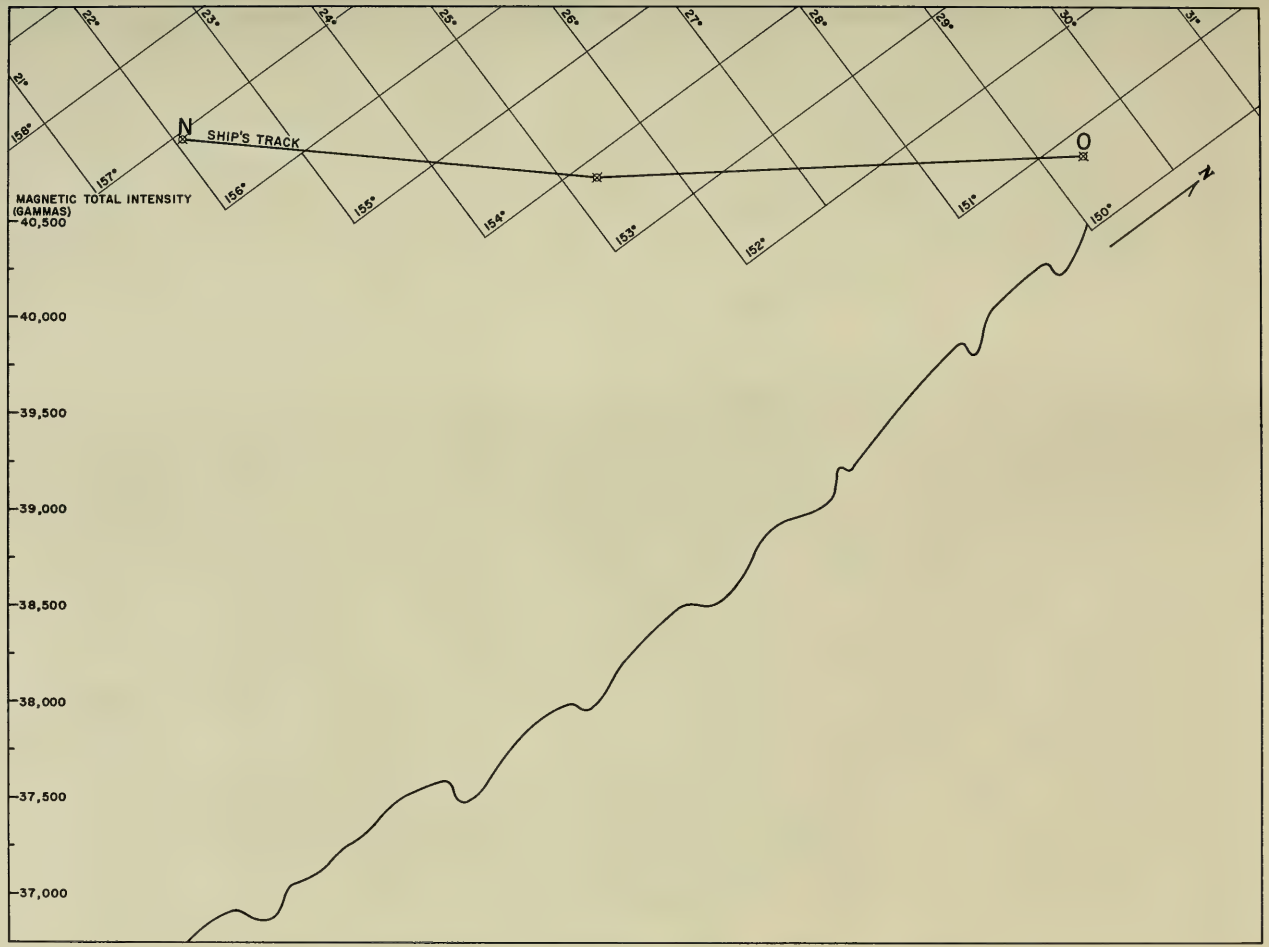


FIGURE 52. MAGNETIC TOTAL INTENSITY PROFILE, SECTION N-O

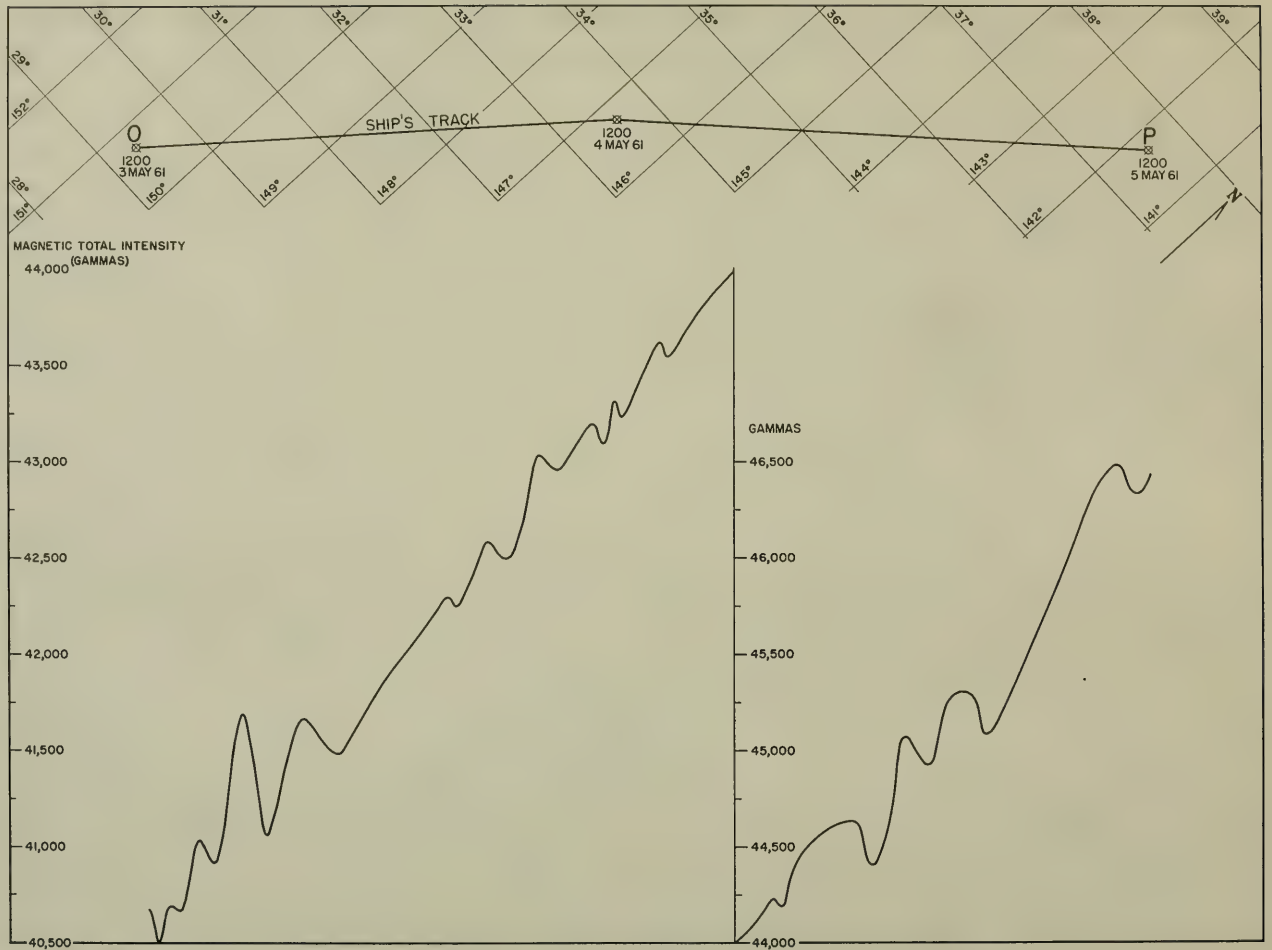


FIGURE 53. MAGNETIC TOTAL INTENSITY PROFILE, SECTION O-P

From an inspection of the general character of the magnetic profiles shown in Figure 30, the wave length of the magnetic anomalies can be seen to decrease markedly over the Pacific - Antarctic Ridge. This is accompanied by an increase in amplitude of the anomalies. The ship tracks crossing the ridge are separated by distances which are, in general, several time the wavelengths of the individual anomalies; thus, the question of whether individual magnetic features carry through from one profile to the next cannot be settled with certainty in every instance. However, it is apparent that some features do carry through from one profile to the next. These include several individual features having distinctive character and certain groups of related features. This carry through provides evidence that elongated magnetic lineations exist in a direction roughly parallel to the ridge. The evidence is strengthened by the magnetic character of the long track that parallels the ridge (1200, 14 March to 1200, 19 March). This track clearly shows longer anomaly wavelengths than appear on tracks at right angles to the ridge. Existence of such magnetic lineations was reported off the west coast of the United States by Mason and Raff (1961). It is believed that this area surveyed along the Pacific - Antarctic Ridge provides the first consistent evidence of magnetic lineations other than those located off the United States west coast. In the Antarctic, however, the lineations appear to trend in an east-northeast direction, parallel to the Pacific - Antarctic Ridge; off the west coast of the United States, the lineations trend in a north-south direction parallel to the postulated extension of the East - Pacific Rise. Various possible explanations to the origin of the lineations off the United States west coast have been advanced. Among these is the possibility that the lineation pattern may be caused by forces related to the earth's rotation. Instead, it now appears that in both of these areas, the lineated patterns may be characteristic of oceanic rises. Thus, the patterns may be an indication of the processes by which the rises were formed.

The track presented in Figure 32 shows very pronounced bathymetric relief. In this respect, this area of lineations in the Antarctic is unlike the similar area off the United States west coast. Off the west coast, the lineations were present but there was no corresponding bathymetric relief. Analyses of possible correlation of the magnetic and bathymetric relief undoubtedly is complicated by complex nonhomogeneous magnetic properties of the underlying rocks. However, close comparison of the magnetic relief with the bathymetric relief indicates a relationship that had not been anticipated. Figure 32 shows magnetic intensity lows over many of the bathymetric highs; at the same time, there are magnetic intensity highs over many of the bathymetric lows. This is the opposite of what normally would be expected if the magnetic anomalies were assumed to be caused by induced magnetic polarization of the rock comprising the bathymetric relief.

The bathymetric feature shown at time 0530 (Fig. 32) is an example of this inverse relationship. To produce the associated magnetic anomaly for this bathymetric feature

would require an intensity of magnetic polarization that is well within reason. However, this magnetization would have to be in a reverse direction from that of the earth's present magnetic field.

Several possible explanations of this inverse relationship between the magnetic and the bathymetric relief may be suggested.

1. The rock comprising the bathymetric relief is in actual fact reversely magnetized. This would indicate that there probably has been a reversal of the earth's magnetic field since the time of original solidification of the rock.

2. The top of the body causing the magnetic anomalies may be buried at some depth. Consequently, it is possible that the magnetic source has a surface relief related inversely to the bathymetric relief, perhaps owing to tectonic processes related to the formation of the ridge.

3. A pattern of correlating intrusions exists. This pattern may be either of granitic intrusions correlating with the bathymetric highs or of ultramafic intrusions correlating with the bathymetric lows.

The dashed line in the lower part of Figure 32 shows calculated estimates of depths to top of magnetic surface, using two-dimensional approximations. Over most of the profile, there is excellent agreement between these calculated depths and the recorded bathymetric depths. This agreement was found to be true also for data gathered over other parts of the ridge. This indicates that the top surface of the magnetic body is probably not buried at any considerable depth.

This phenomenon of inverse relationships between magnetic total intensity profiles and bathymetric relief has been observed at widely separated points. Bromery, Emory, and Balsley (1960) describe such an area off the west coast of the United States; Keller, Meuschke, and Alldredge (1954) mention briefly a similar occurrence found in the Gulf of Alaska.

Further investigations may determine that in at least some instances these inverse relationships are indicative of changes in the direction of the paleomagnetic field. In such cases, the direction of remanent magnetism derived from magnetic data in the ocean areas then can be compared with paleomagnetic data from land areas. The combined data then might make it possible to draw inferences concerning the age of oceanic crustal rocks.

V. ICE RECONNAISSANCE

The Hydrographic Office conducted an aerial ice reconnaissance program in the Ross Sea area during the Antarctic resupply period of Operation DEEP FREEZE 61. The objective of this program was to provide ice data to Commander, U. S. Naval Support Force, Antarctica, in support of ship movements and, at the same time, to acquire a history of ice conditions upon which future ice prediction techniques could be formulated.

Aerial ice reconnaissance was conducted on a non-interference basis and ideal observing conditions seldom were available. A total of thirty-one flights were participated in by Hydrographic Office ice observers, nineteen of which were U. S. Air Force logistics flights between Christchurch, New Zealand, and NAF McMurdo. These flights were at an altitude of about 9,000 feet and on a direct track between check points. Ice observations were limited to certain areas; some details of floe size, relief, and ice age were difficult to estimate owing to high flight altitude.

In addition to the long-range flights, ice reconnaissance was conducted on twelve local flights in the McMurdo Sound area. Surface ice observations were made by ice observers assigned to GLACIER and EASTWIND. Results of ice reconnaissance observations are shown in Figures 54 through 81.

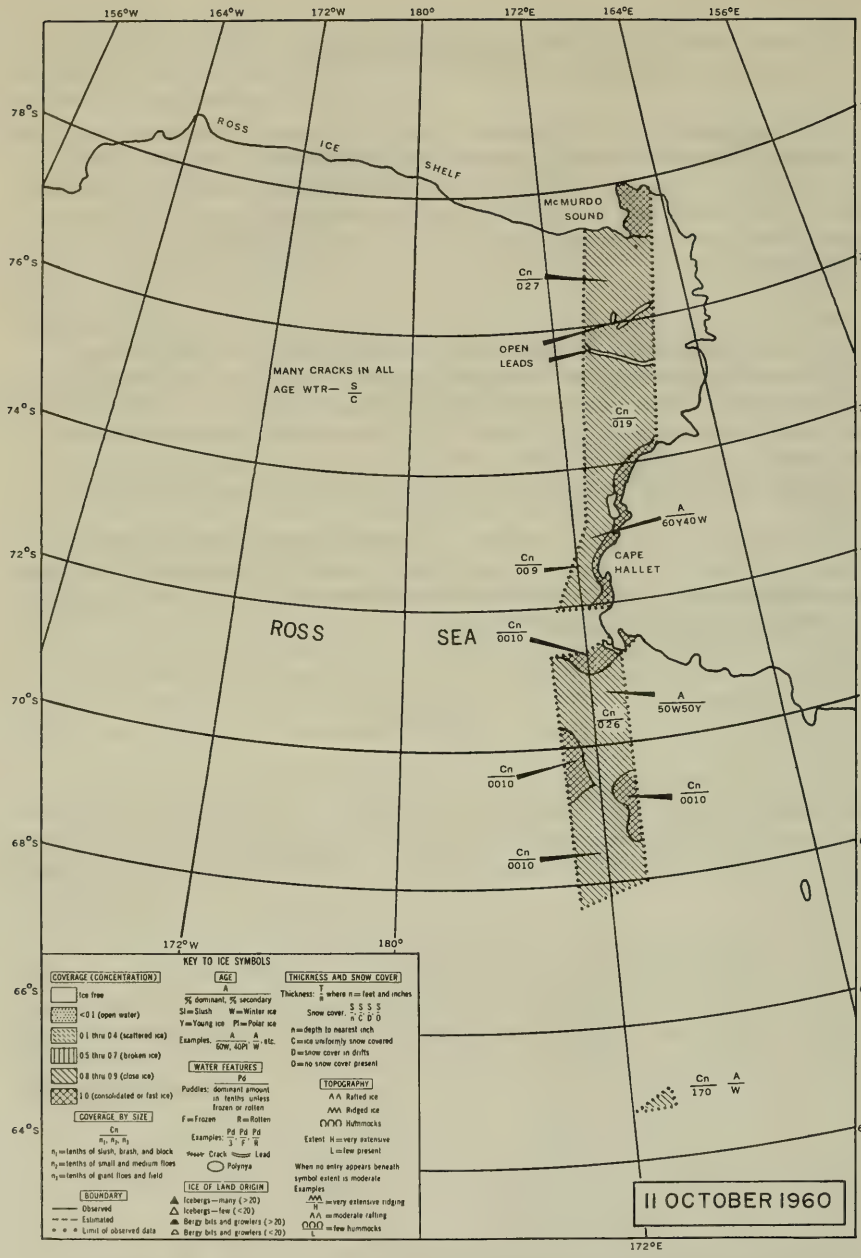


FIGURE 54. RESULTS OF AERIAL ICE RECONNAISSANCE, ROSS SEA

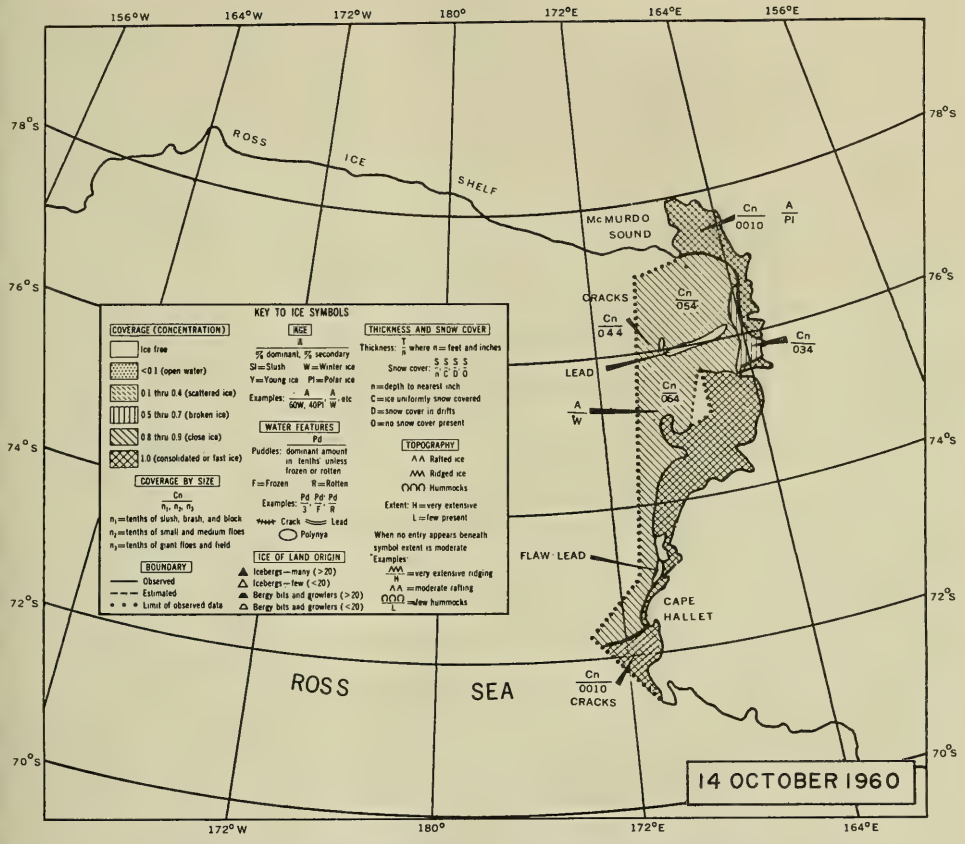


FIGURE 55. RESULTS OF AERIAL ICE RECONNAISSANCE, ROSS SEA

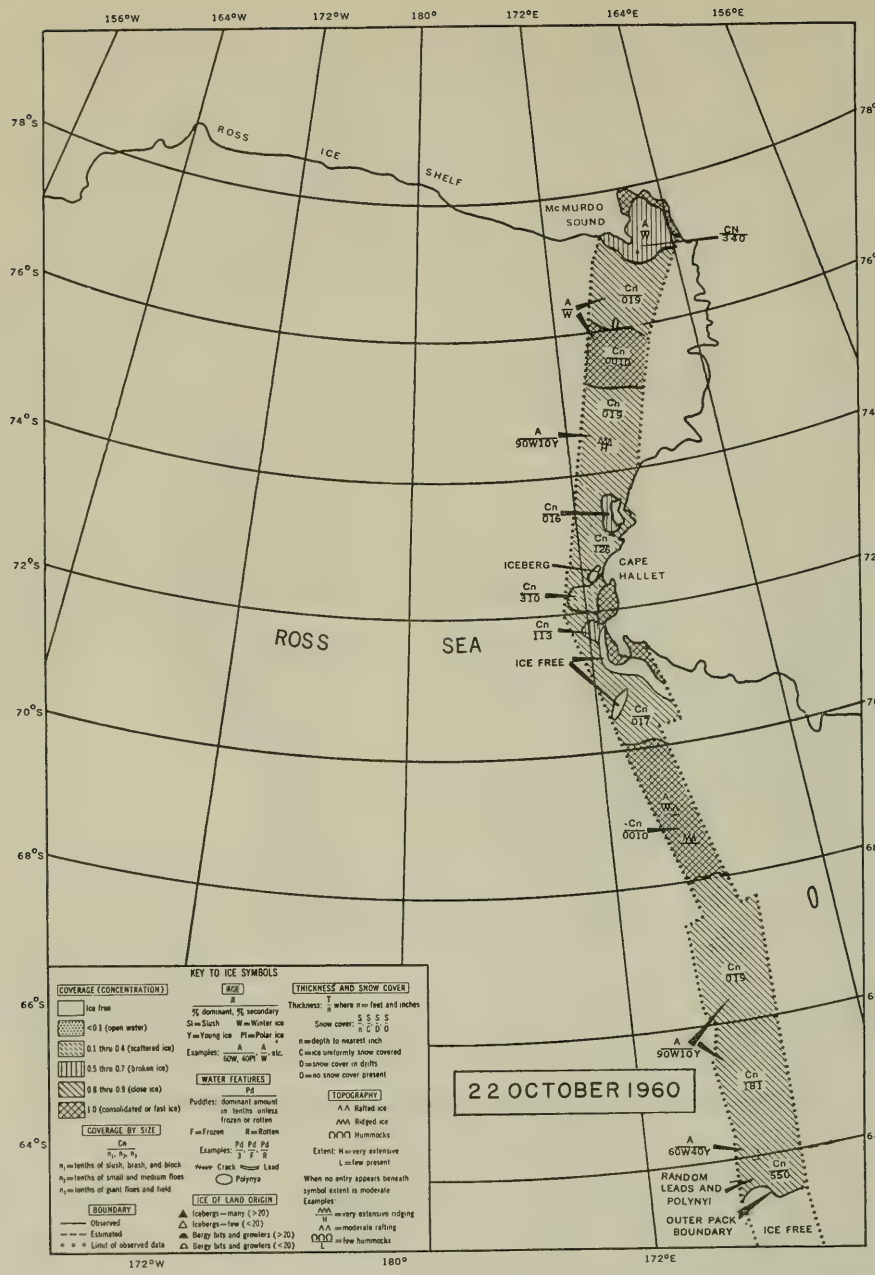


FIGURE 56. RESULTS OF AERIAL ICE RECONNAISSANCE, ROSS SEA

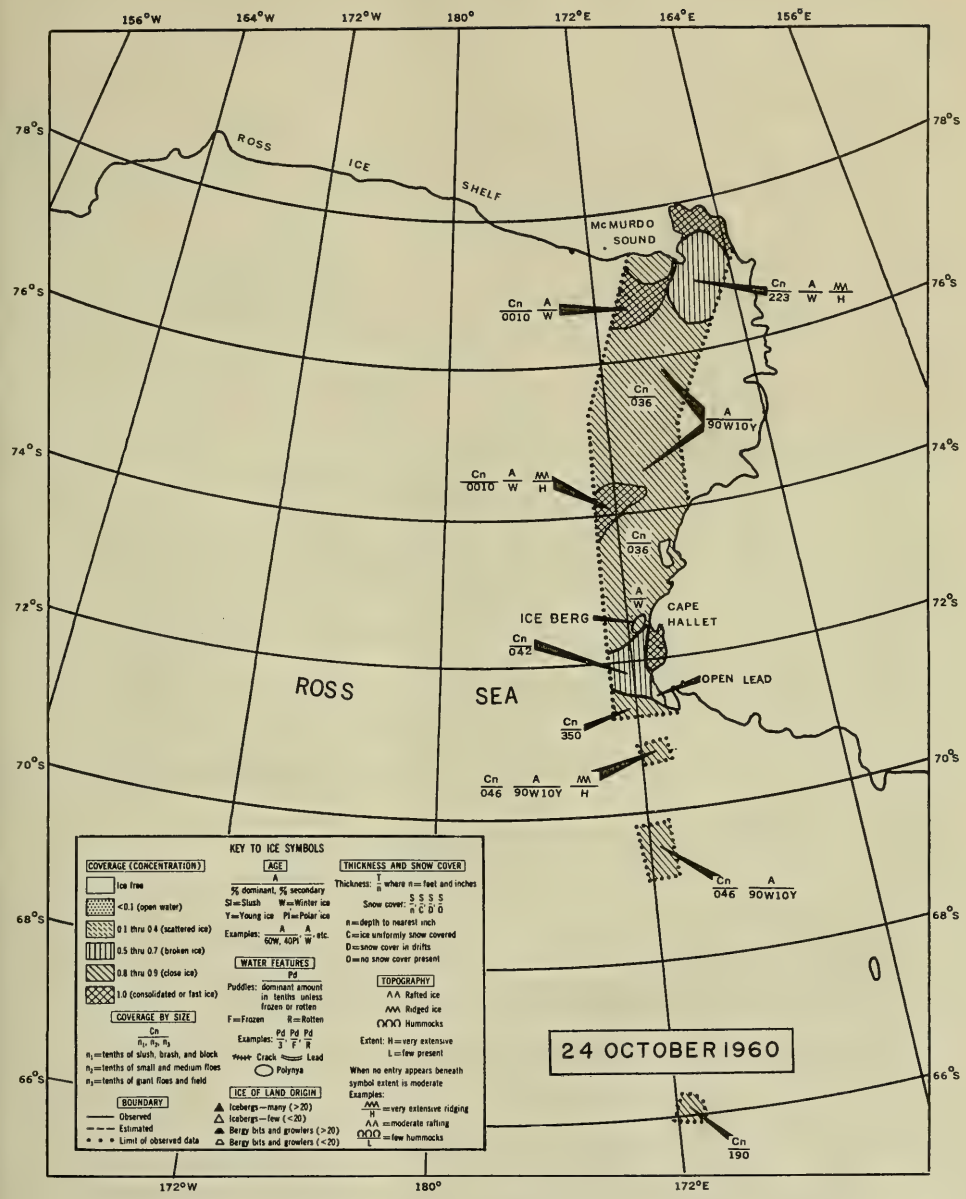


FIGURE 57. RESULTS OF AERIAL ICE RECONNAISSANCE, ROSS SEA

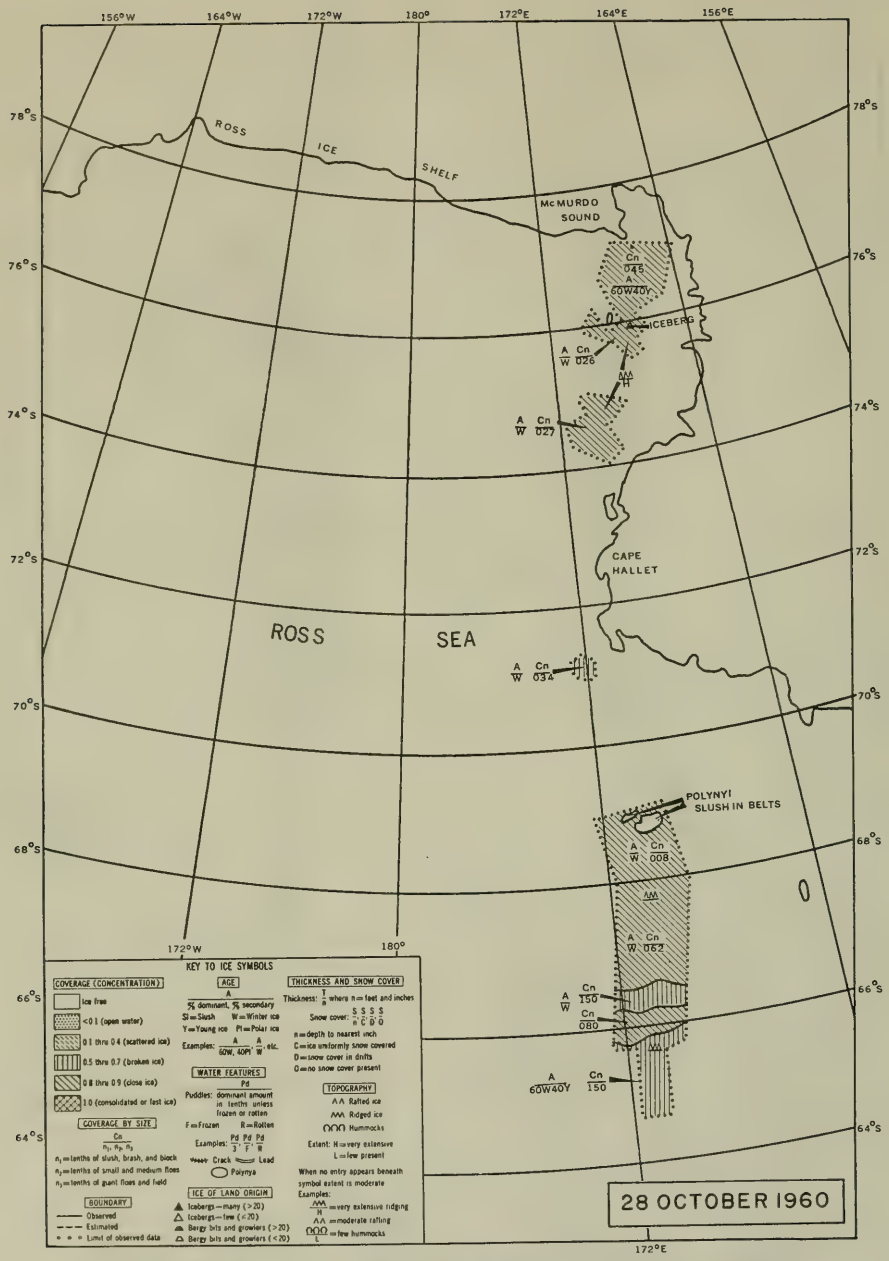


FIGURE 58. RESULTS OF AERIAL ICE RECONNAISSANCE, ROSS SEA

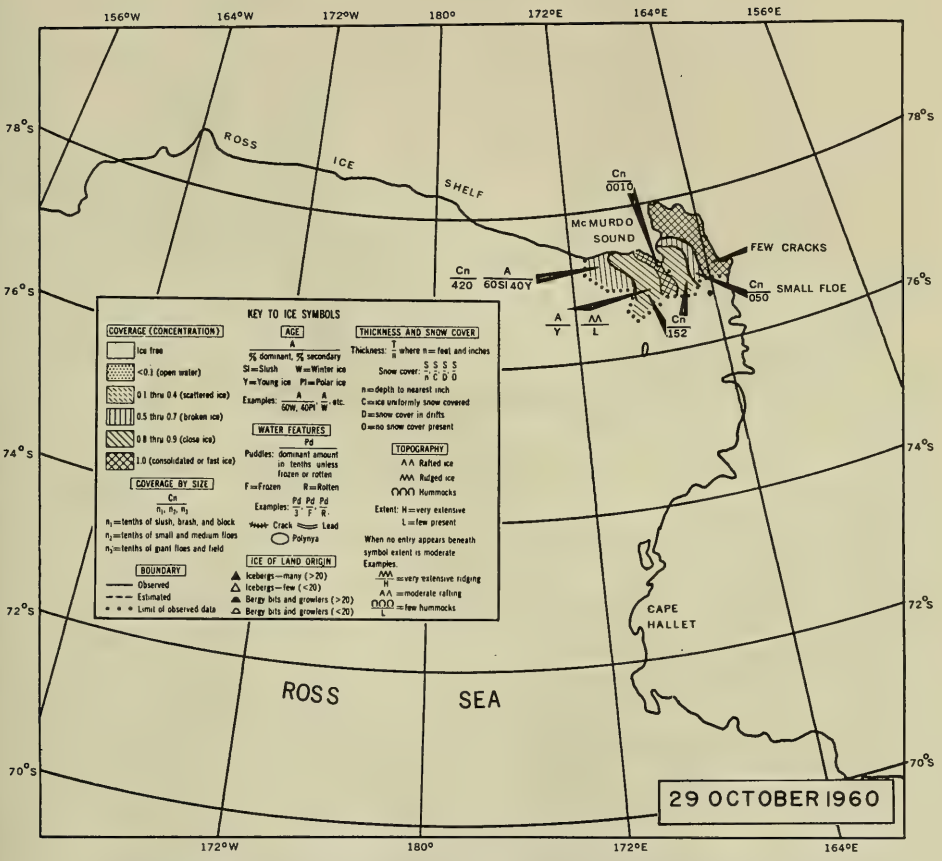


FIGURE 59. RESULTS OF AERIAL ICE RECONNAISSANCE, ROSS SEA

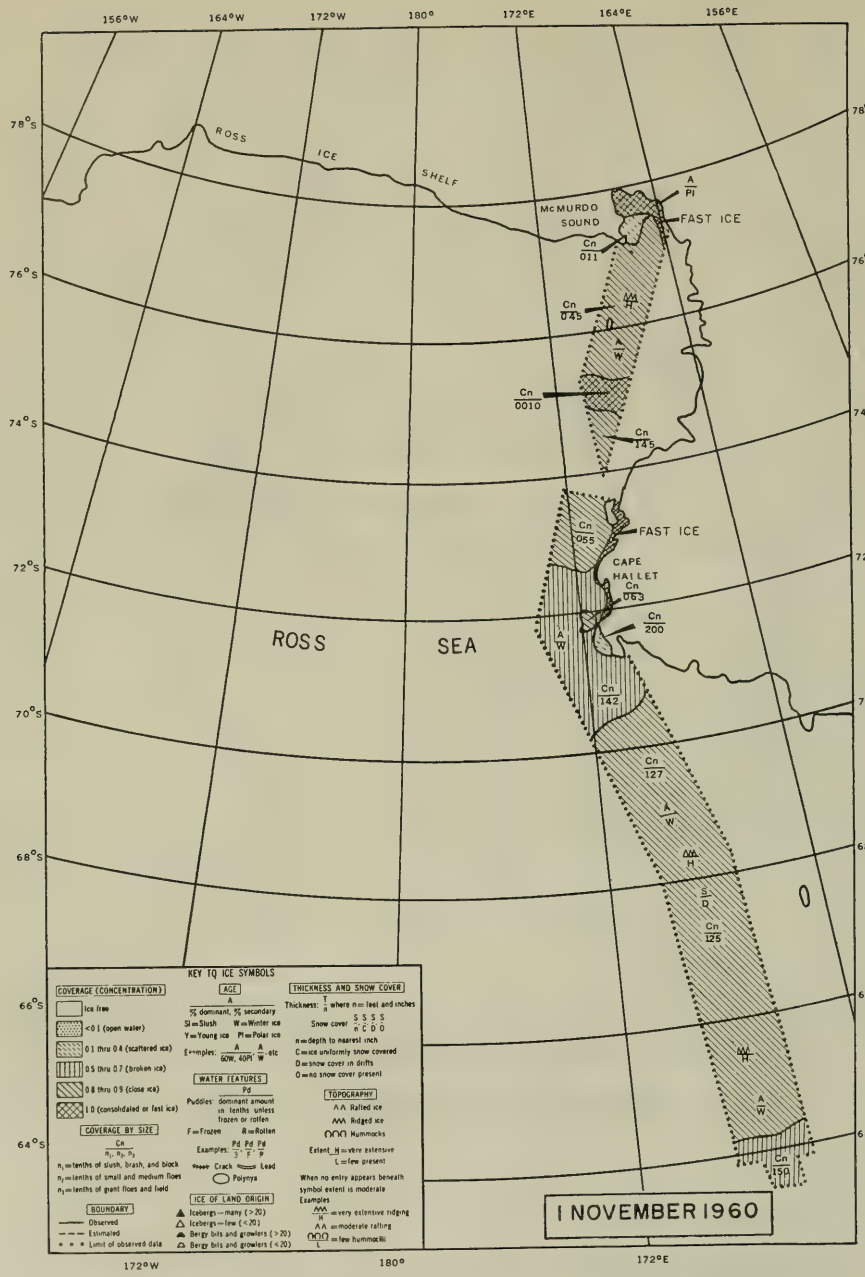
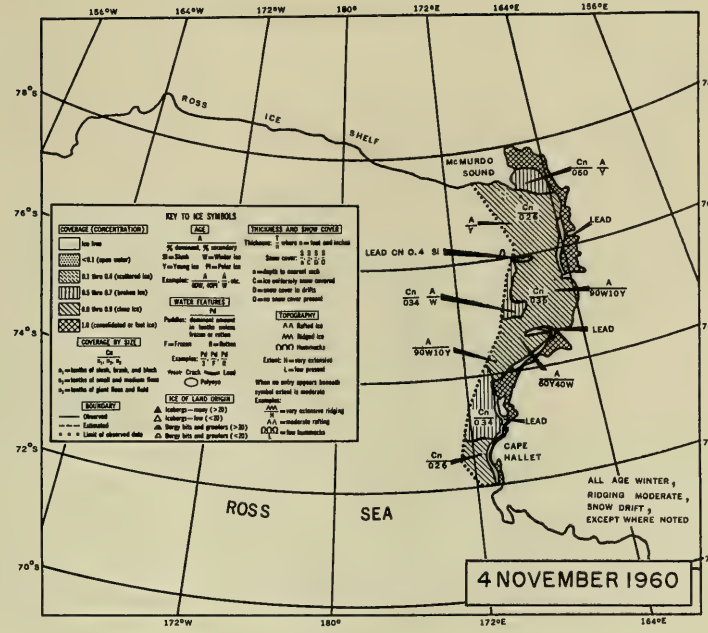


FIGURE 60. RESULTS OF AERIAL ICE RECONNAISSANCE, ROSS SEA



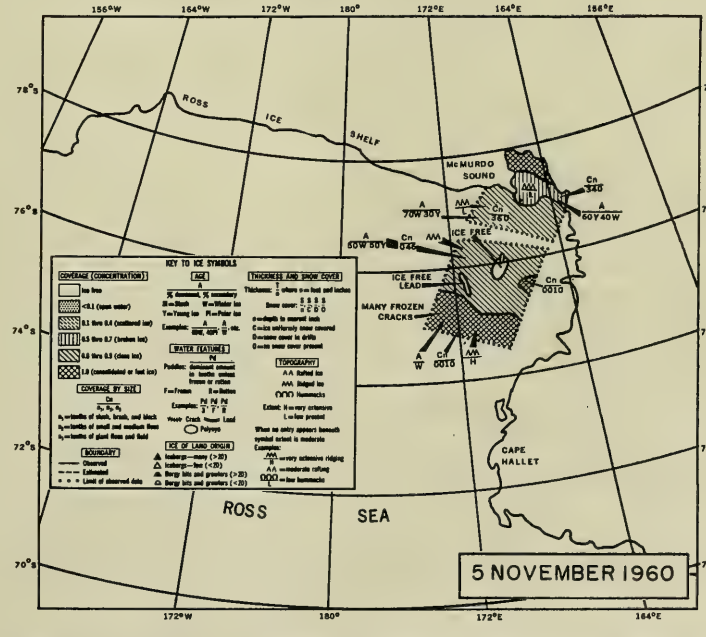


FIGURE 61. RESULTS OF AERIAL ICE RECONNAISSANCE, ROSS SEA

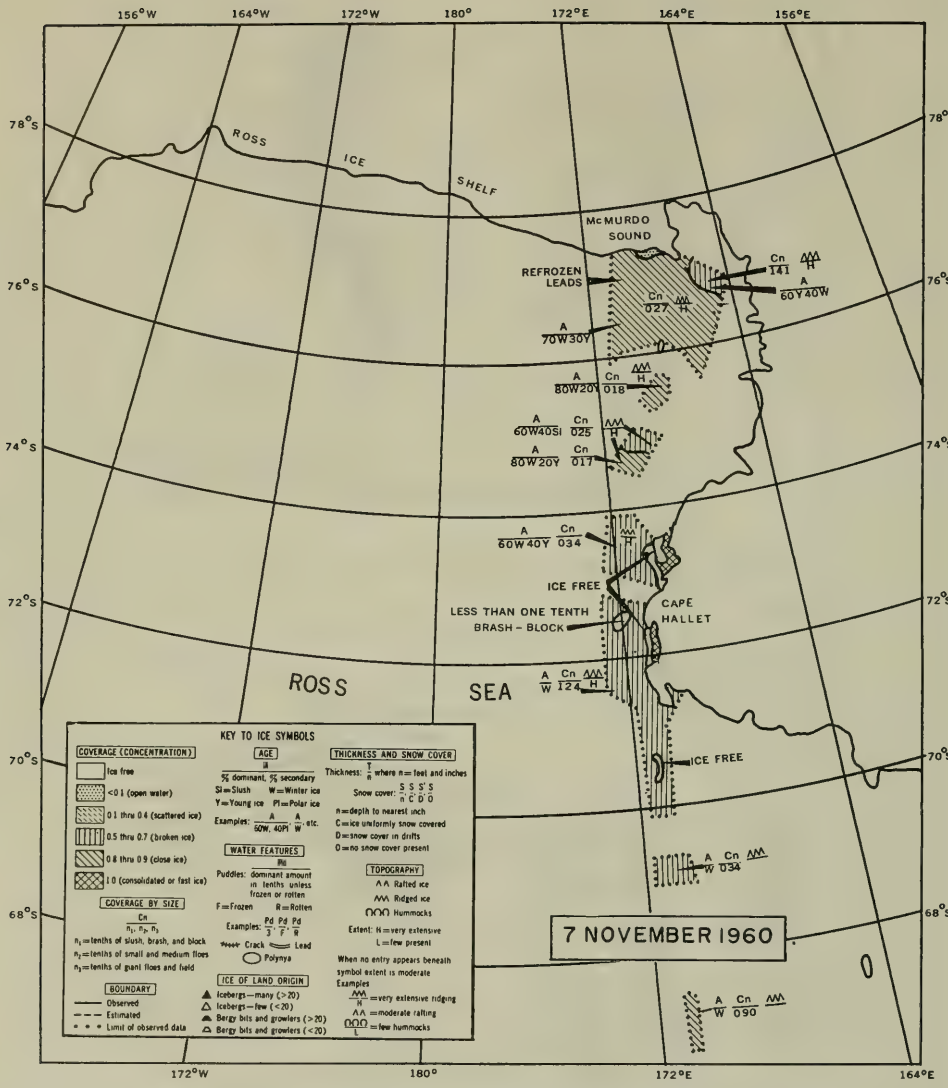


FIGURE 62. RESULTS OF AERIAL ICE RECONNAISSANCE, ROSS SEA

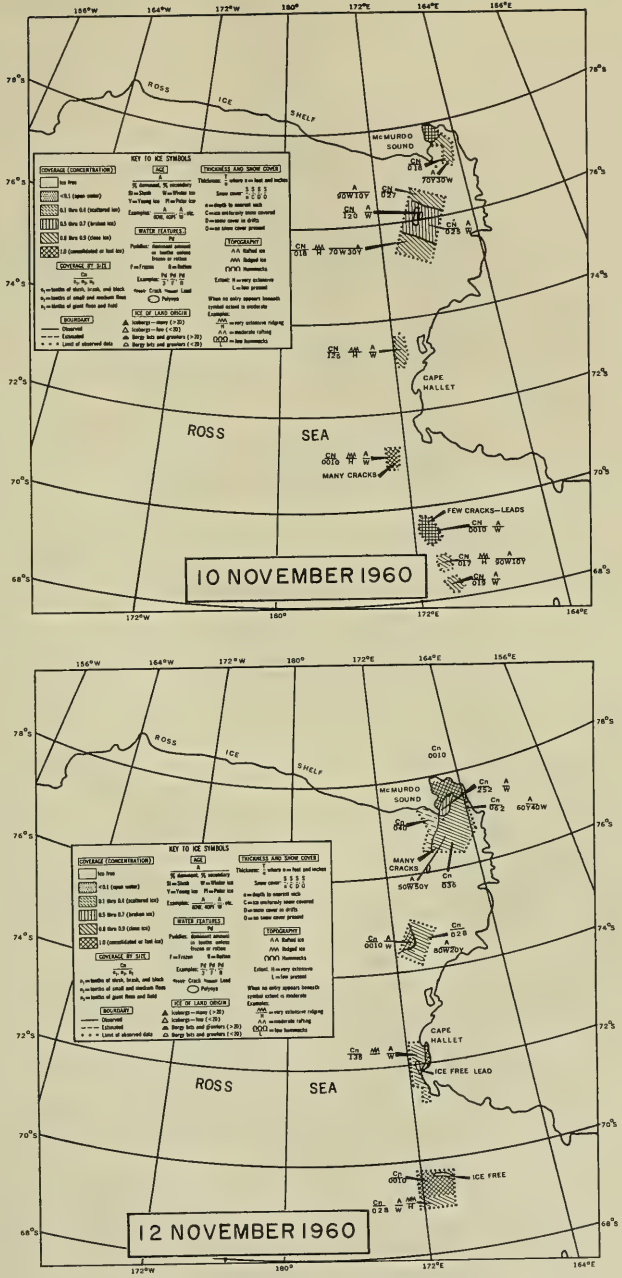


FIGURE 63. RESULTS OF AERIAL ICE RECONNAISSANCE, ROSS SEA

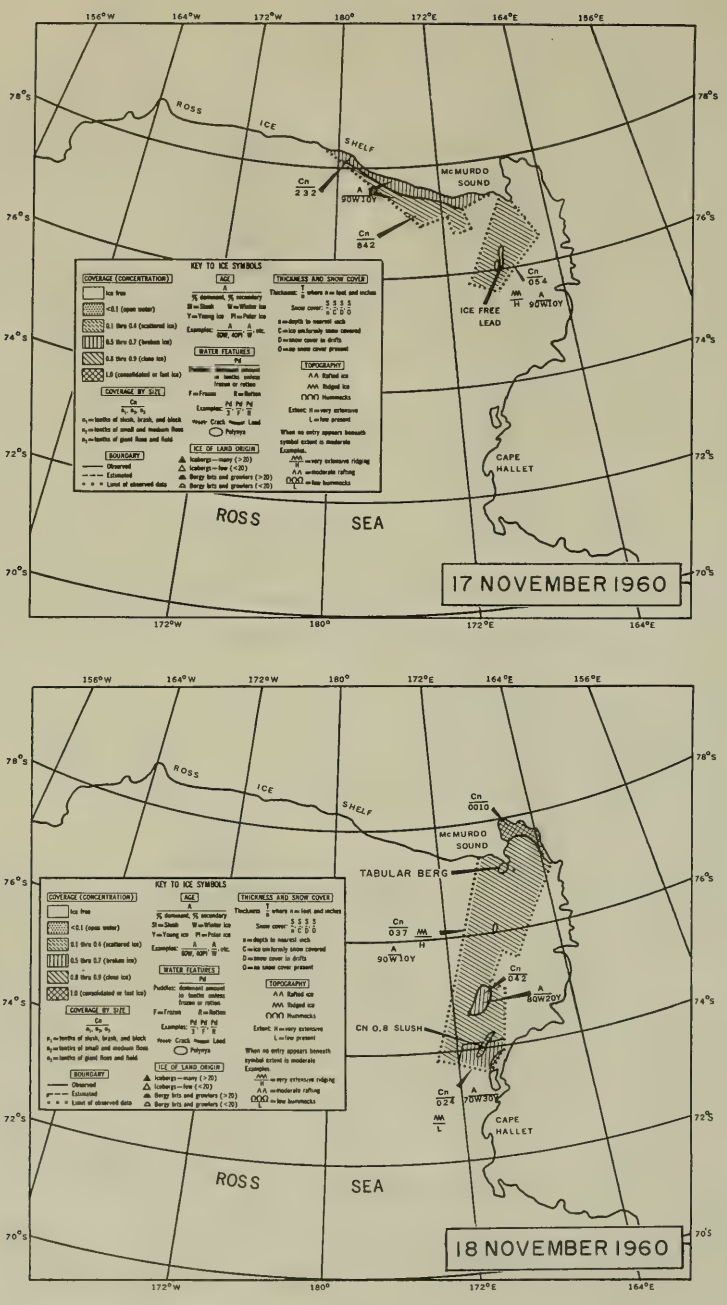
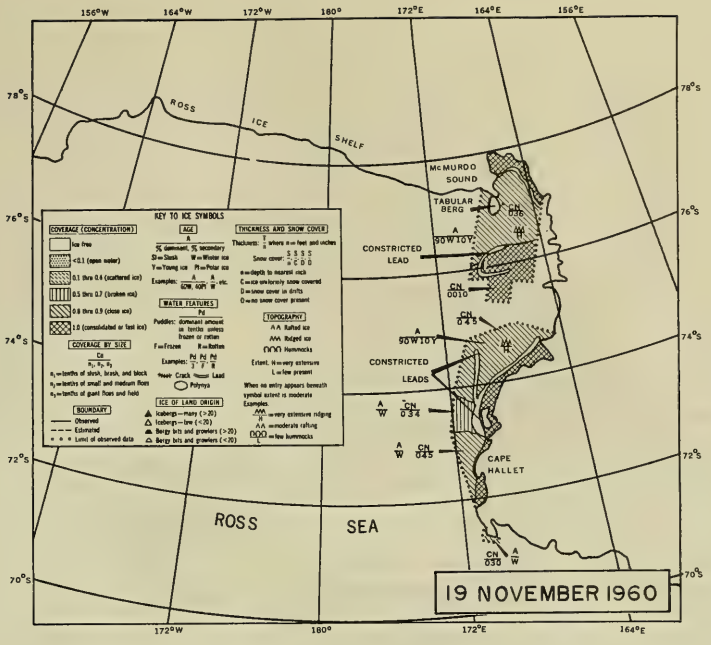


FIGURE 64. RESULTS OF AERIAL ICE RECONNAISSANCE, ROSS SEA



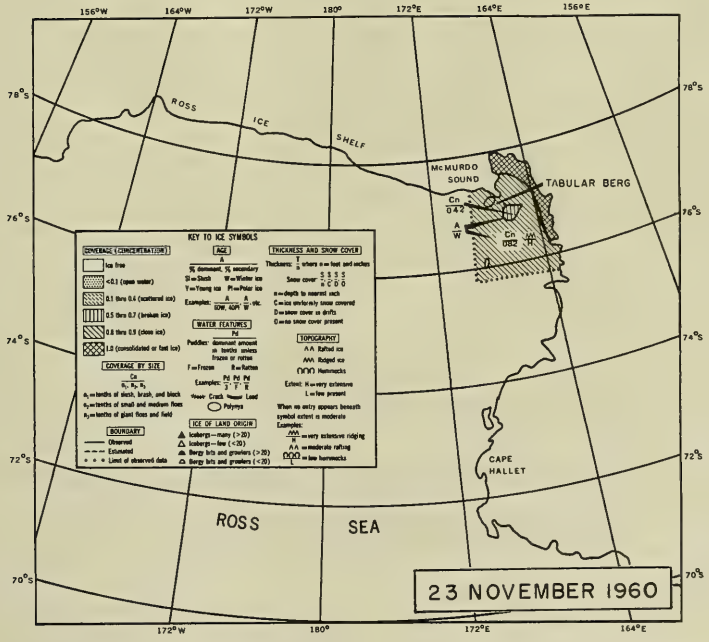


FIGURE 65. RESULTS OF AERIAL ICE RECONNAISSANCE, ROSS SEA

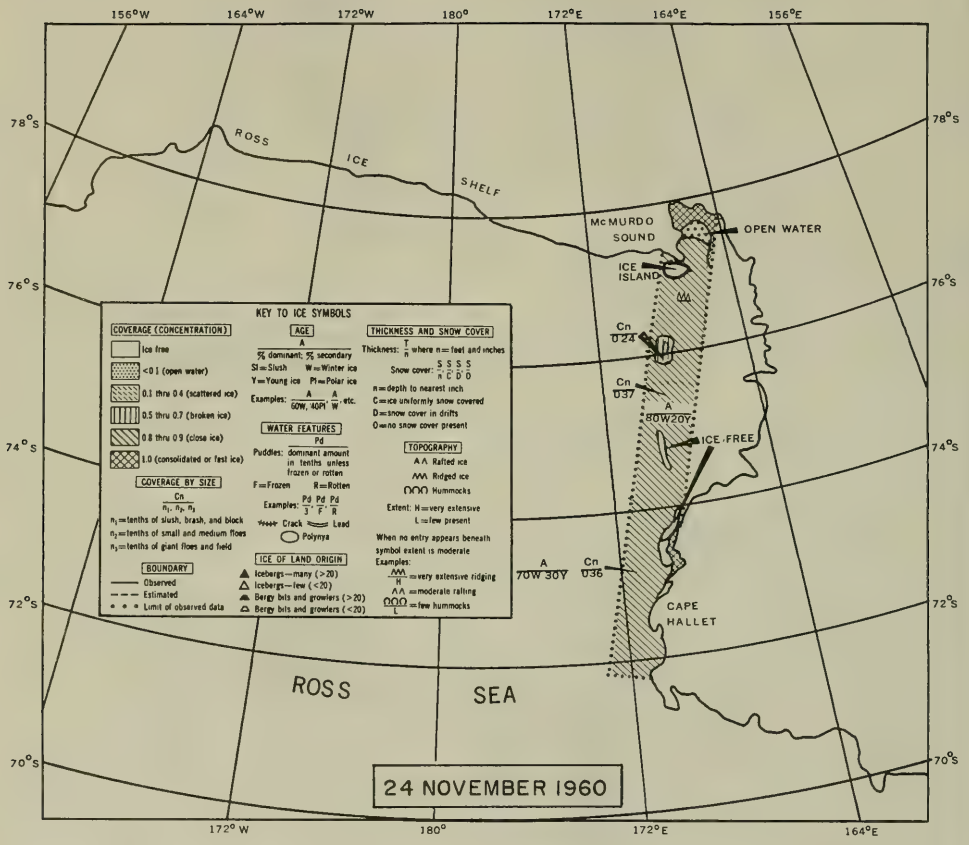


FIGURE 66. RESULTS OF AERIAL ICE RECONNAISSANCE, ROSS SEA

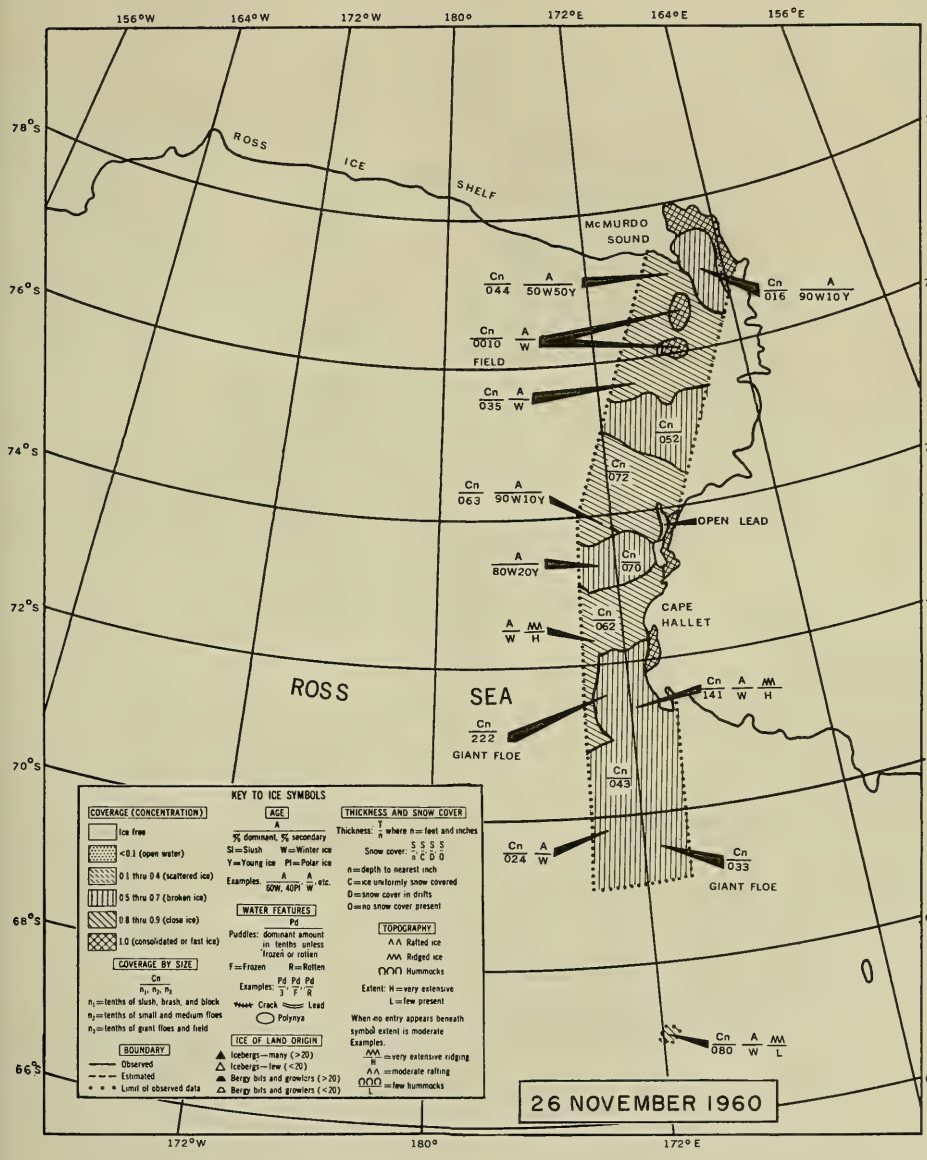


FIGURE 67. RESULTS OF AERIAL ICE RECONNAISSANCE, ROSS SEA

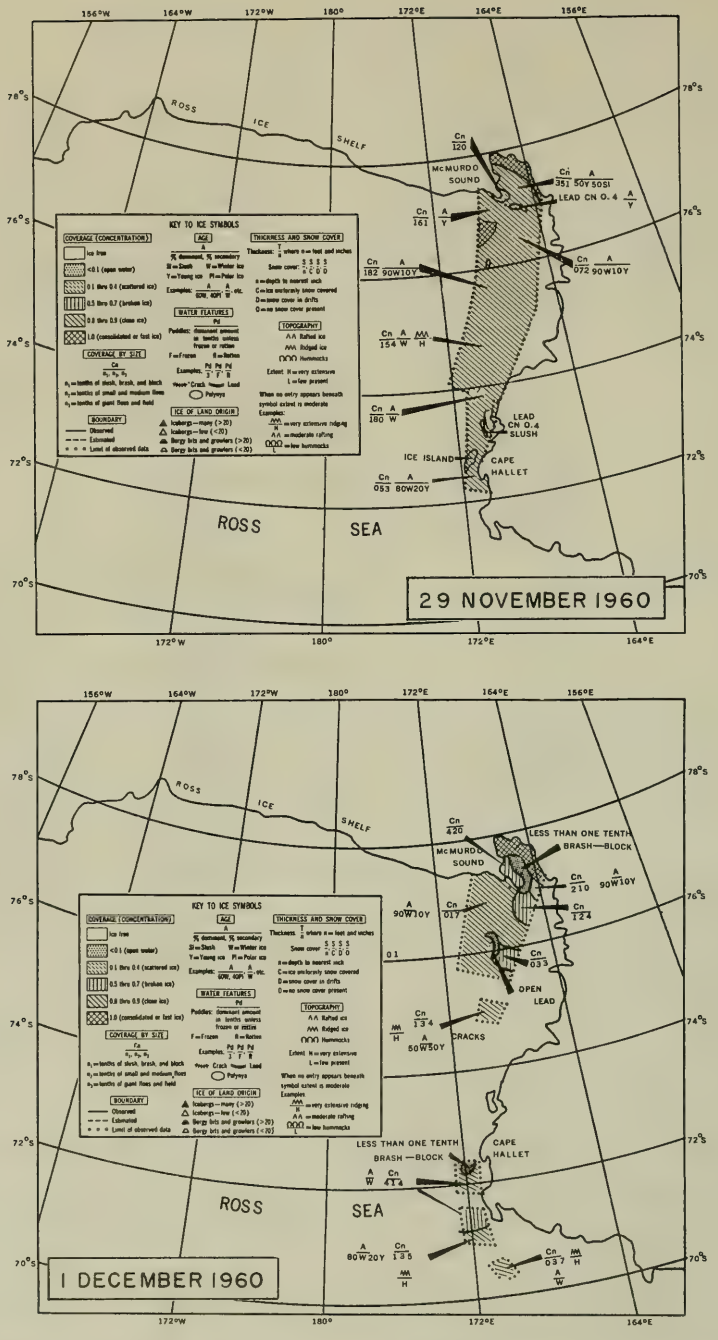


FIGURE 68. RESULTS OF AERIAL ICE RECONNAISSANCE, ROSS SEA

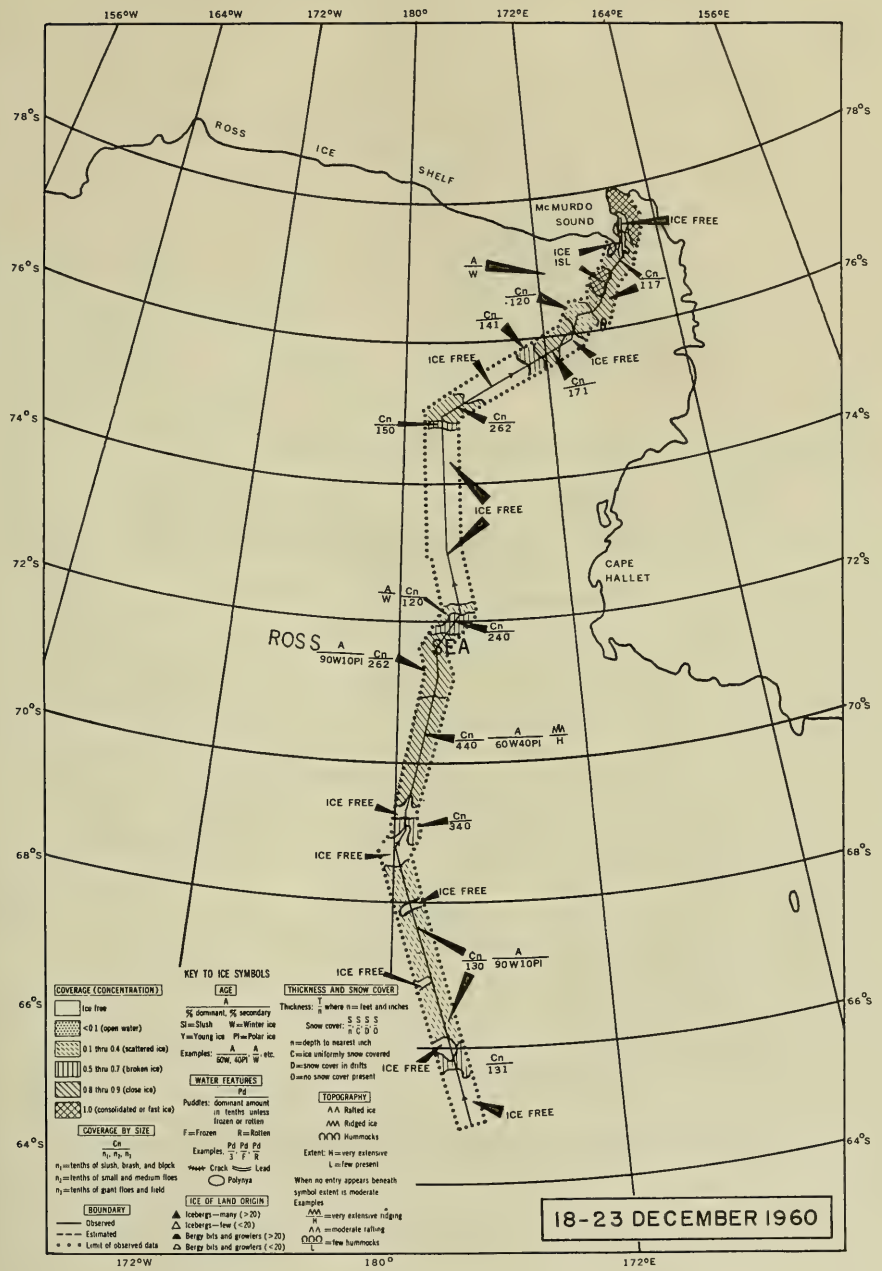


FIGURE 69. RESULTS OF SURFACE ICE RECONNAISSANCE, ROSS SEA

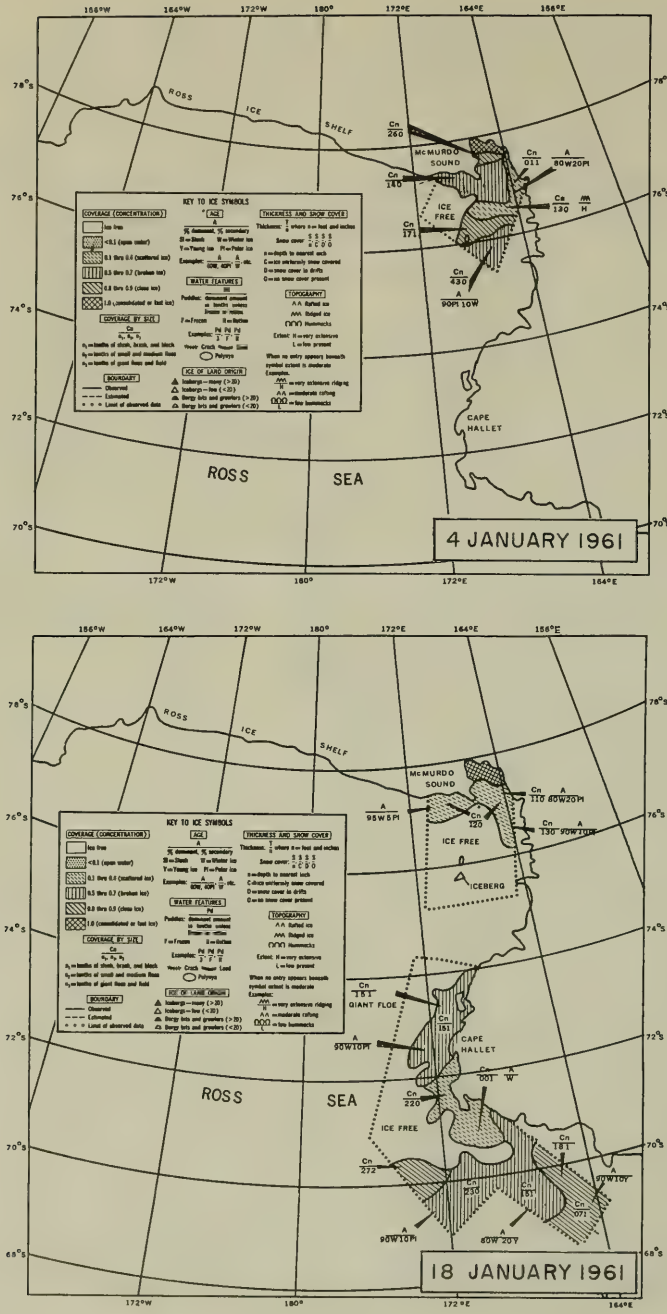


FIGURE 70. RESULTS OF AERIAL ICE RECONNAISSANCE, ROSS SEA

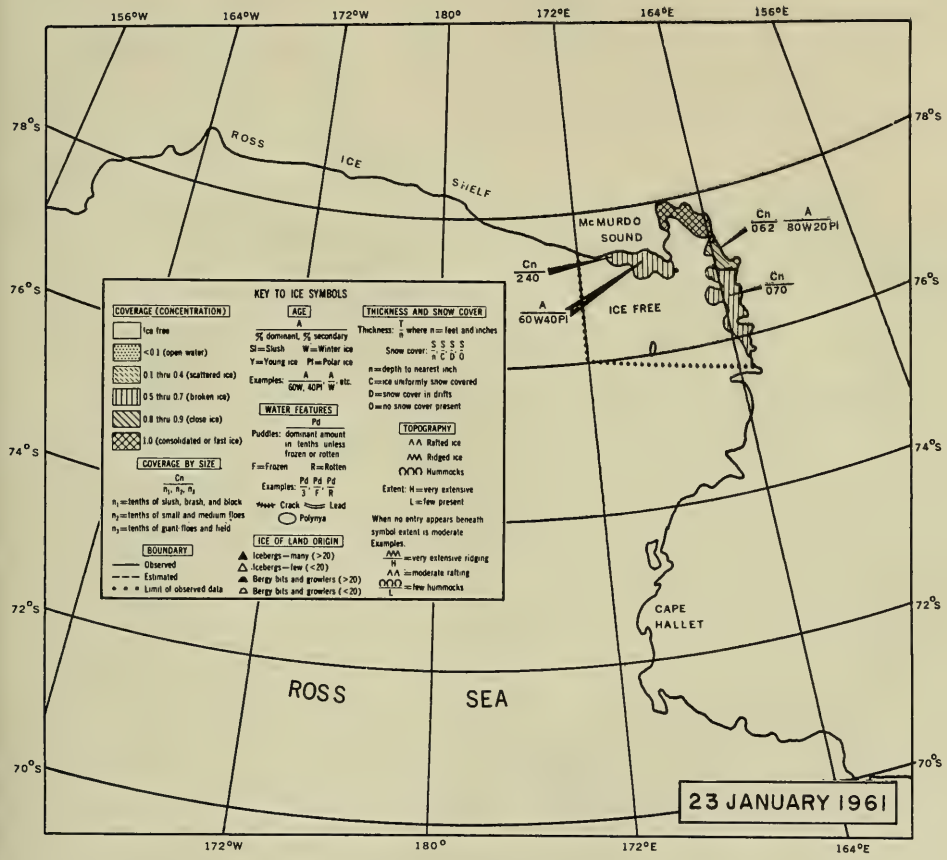


FIGURE 71. RESULTS OF AERIAL ICE RECONNAISSANCE, ROSS SEA

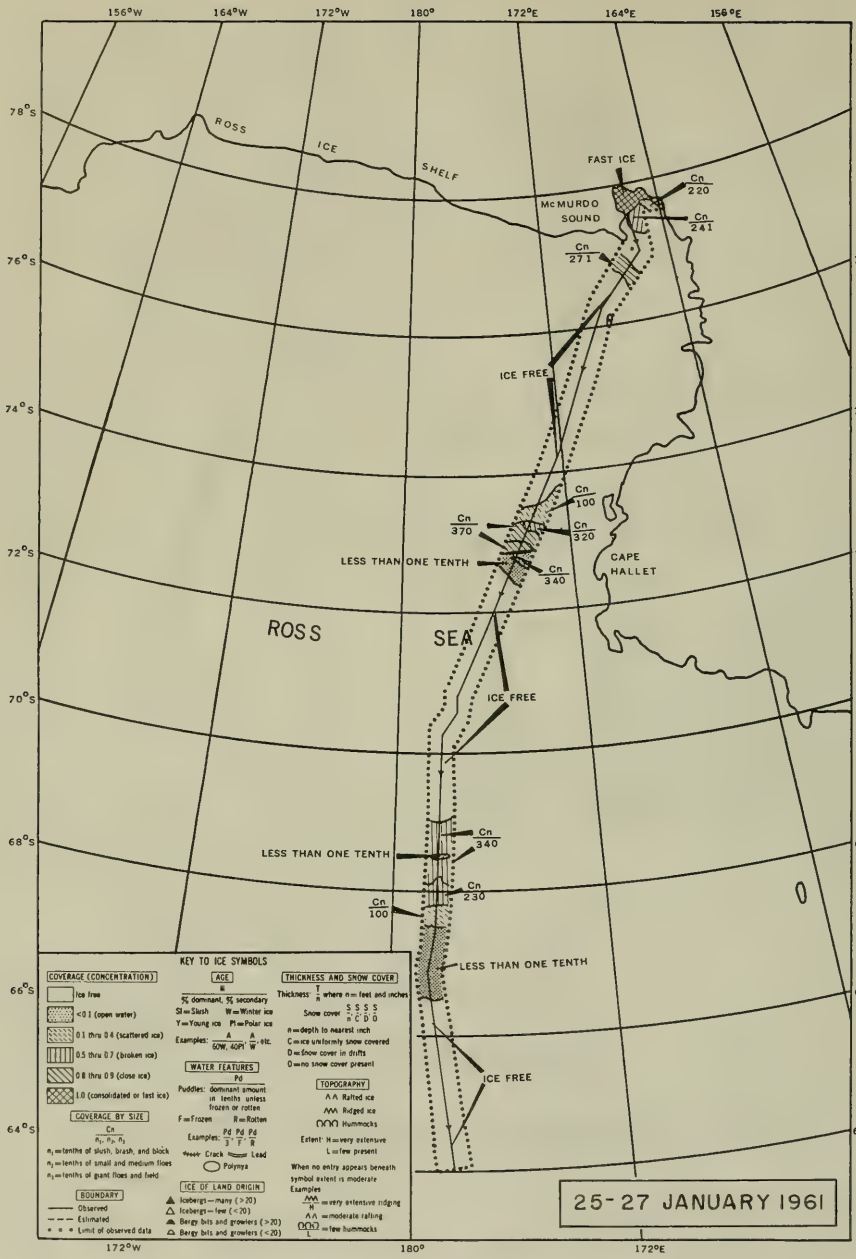


FIGURE 72. RESULTS OF SURFACE ICE RECONNAISSANCE, ROSS SEA

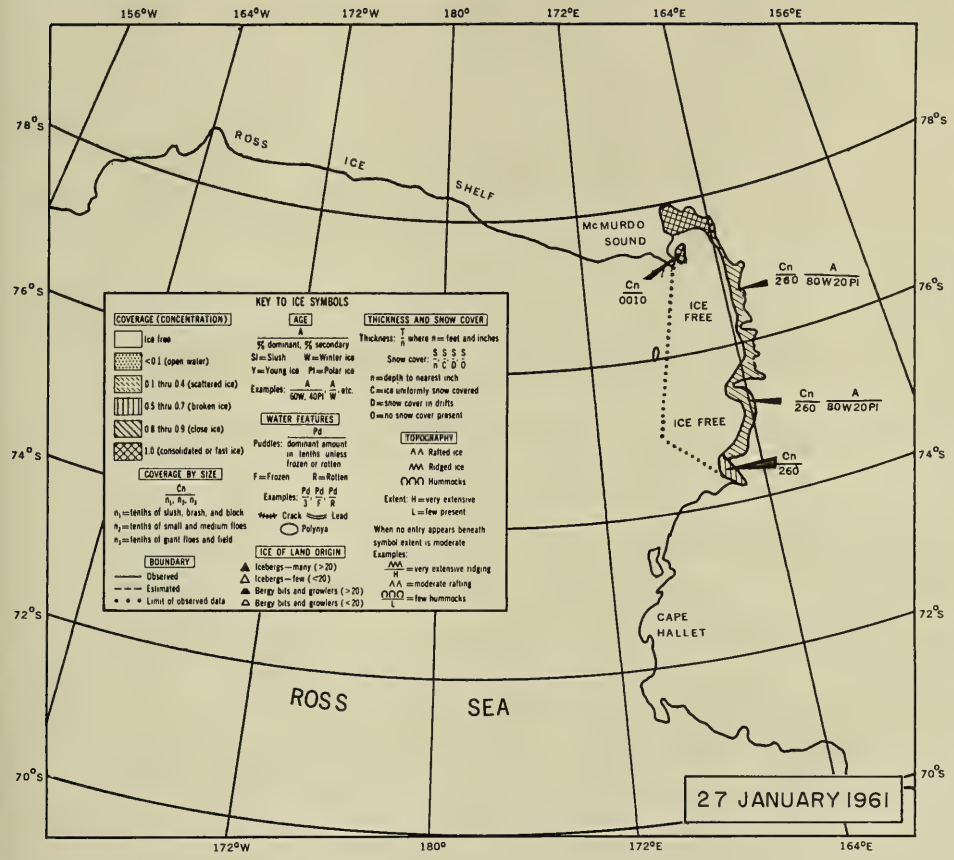
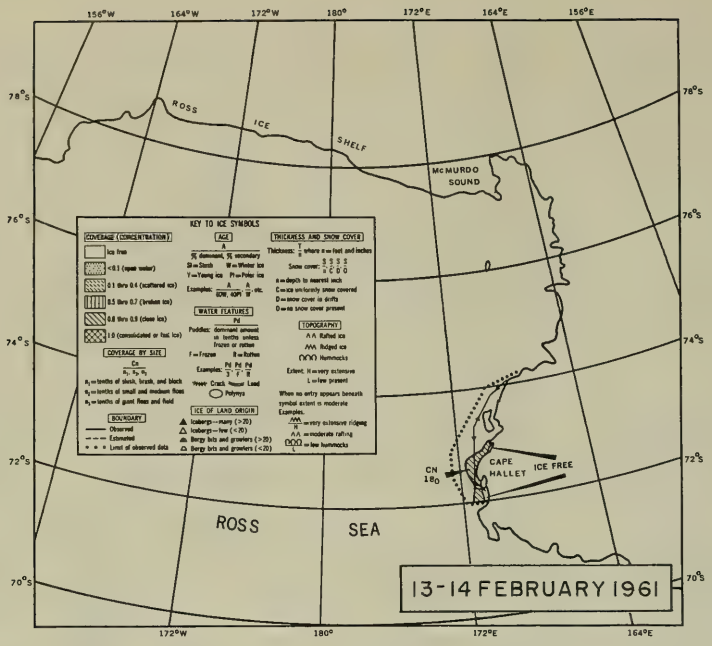


FIGURE 73. RESULTS OF AERIAL ICE RECONNAISSANCE, ROSS SEA



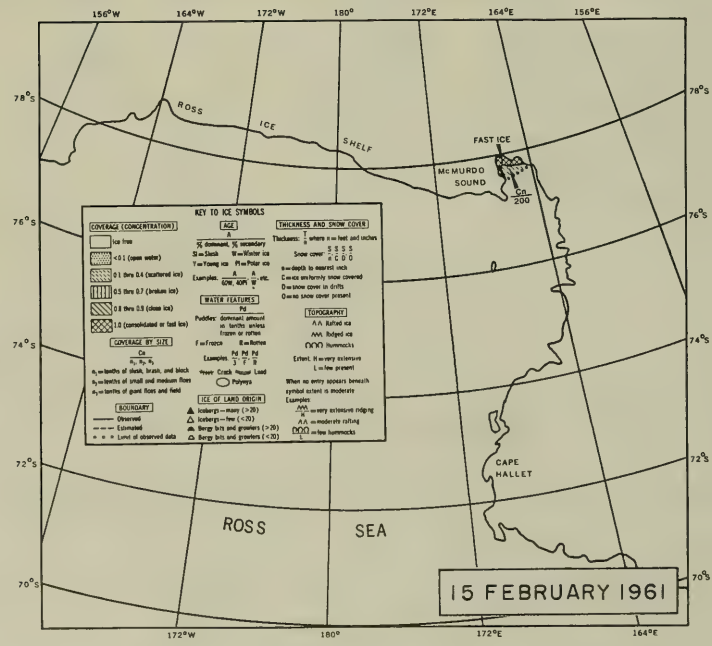
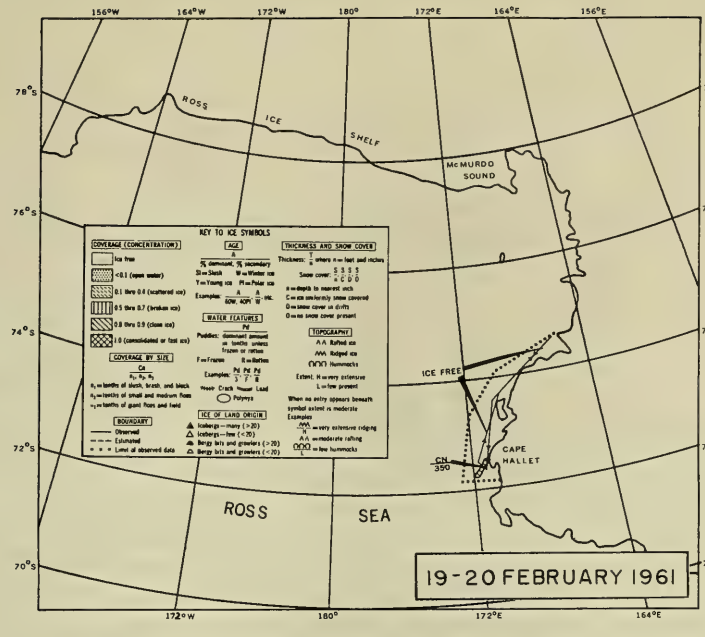


FIGURE 74. RESULTS OF SURFACE ICE RECONNAISSANCE, ROSS SEA



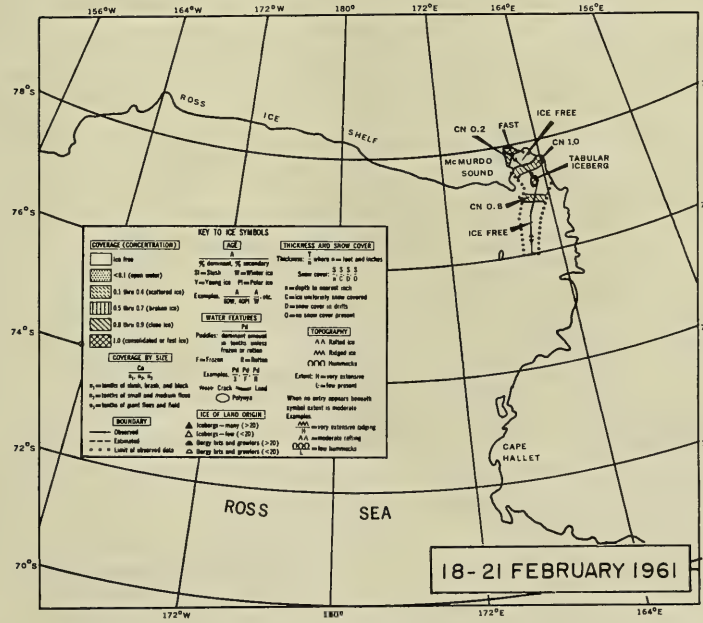


FIGURE 75. RESULTS OF SURFACE ICE RECONNAISSANCE, ROSS SEA

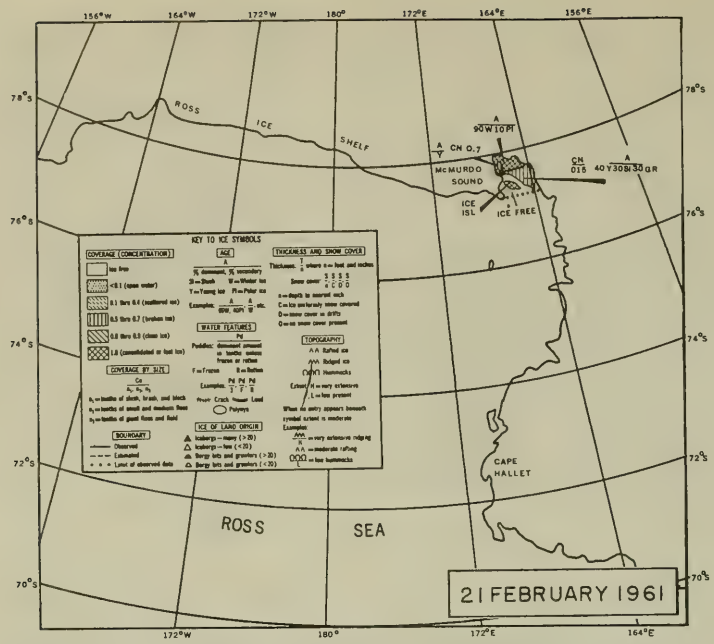


FIGURE 76. RESULTS OF AERIAL ICE RECONNAISSANCE, ROSS SEA

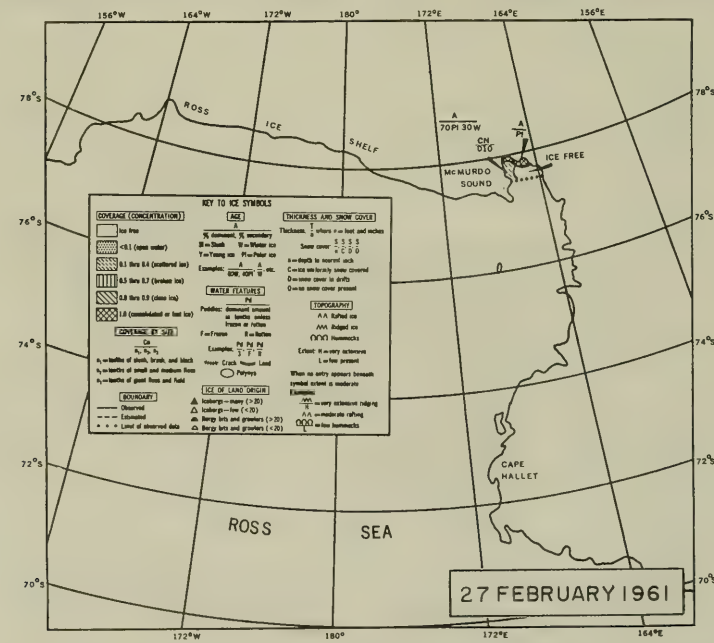


FIGURE 77. RESULTS OF SURFACE ICE RECONNAISSANCE, ROSS SEA

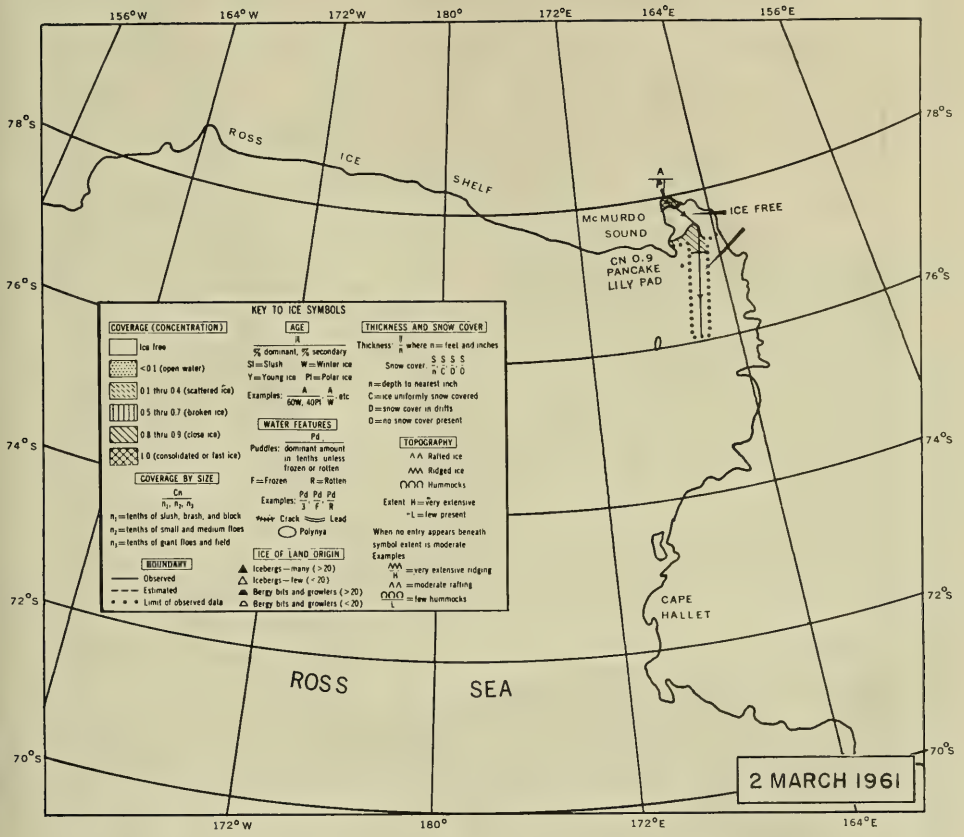


FIGURE 78. RESULTS OF SURFACE ICE RECONNAISSANCE, ROSS SEA

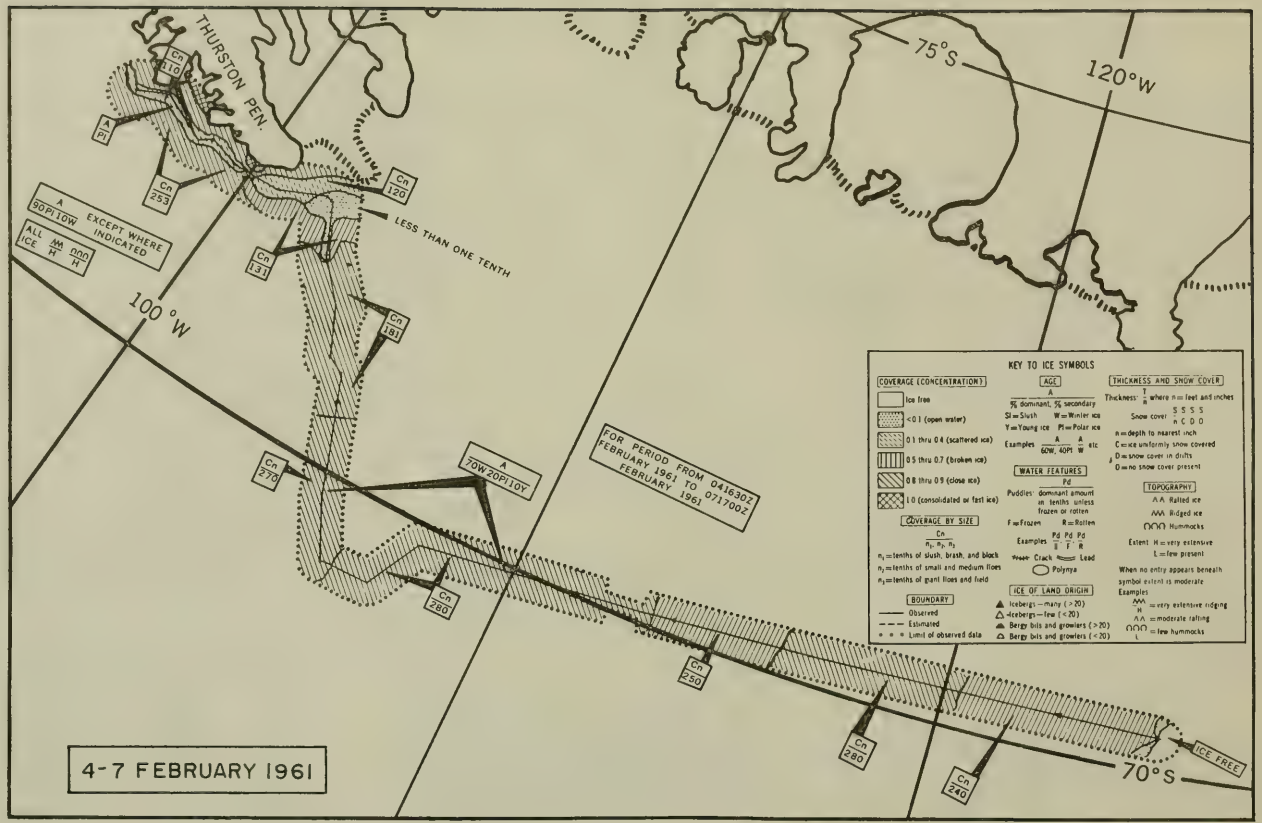


FIGURE 79. RESULTS OF SURFACE ICE RECONNAISSANCE, AMUNDSEN SEA

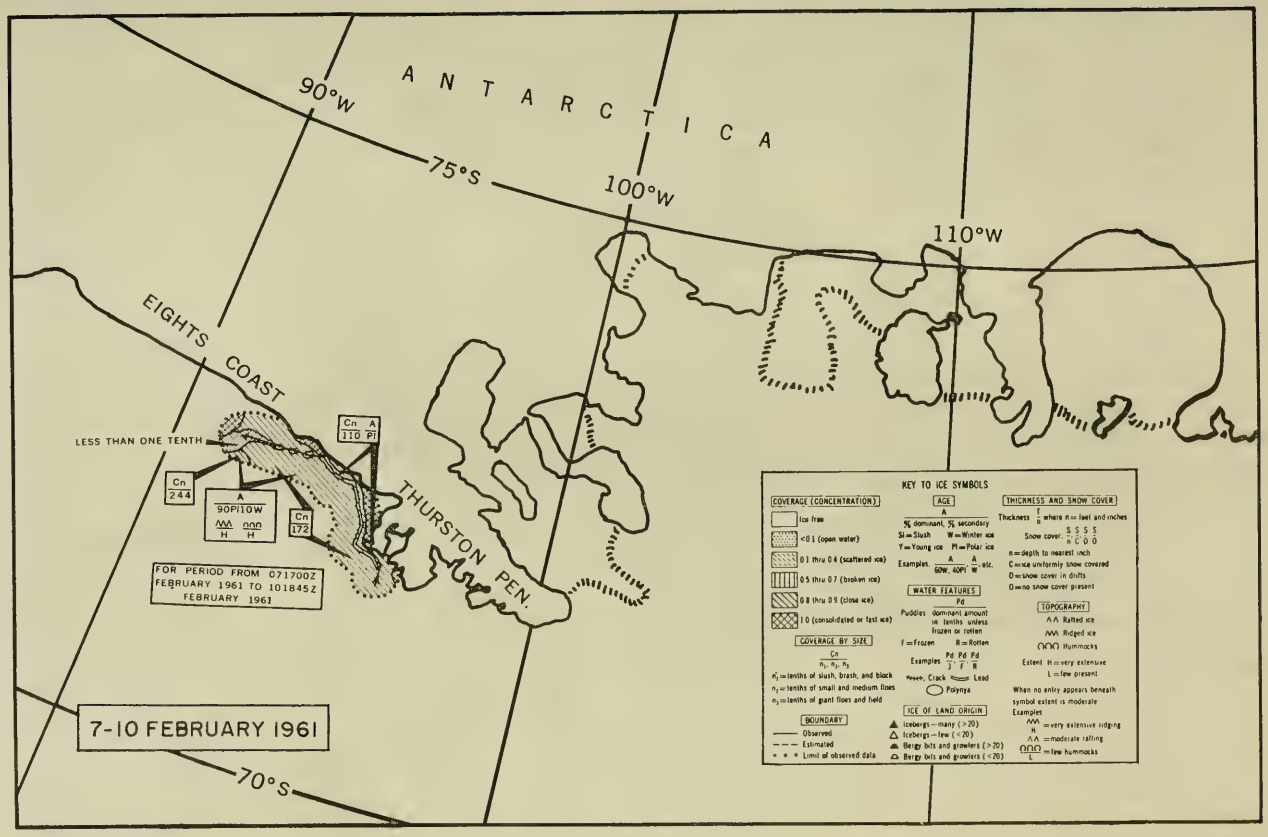


FIGURE 80. RESULTS OF SURFACE ICE RECONNAISSANCE, BELLINGSHAUSEN SEA

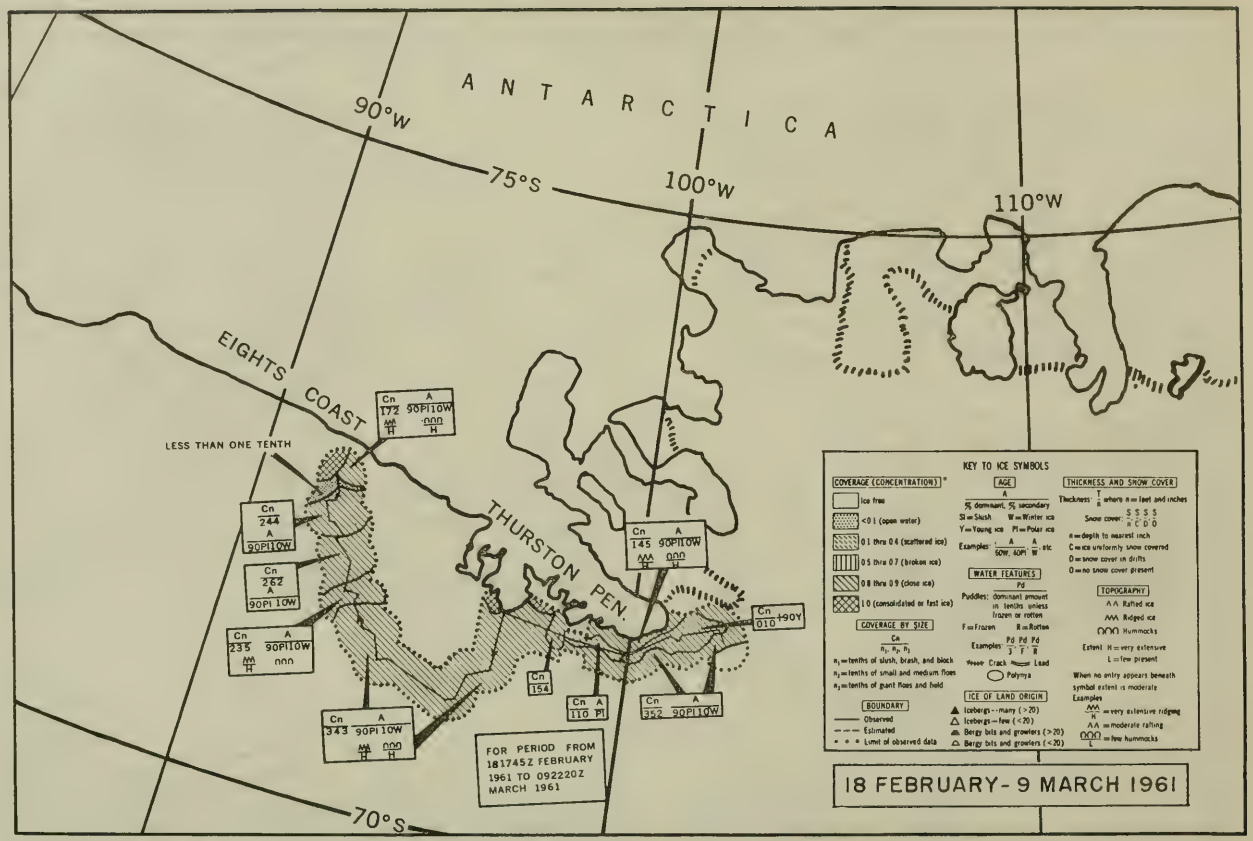


FIGURE 81. RESULTS OF SURFACE ICE RECONNAISSANCE, BELLINGSHAUSEN SEA

REFERENCES

Bromery, R. W., Emery, K. O., and Balsley, J. R., Jr., 1960, Reconnaissance Airborne Magnetometer Survey off Southern California, U. S. Geological Survey Geophysical Investigations Map GP-211.

Deacon, G. E. R., 1937, "The Hydrology of the Southern Ocean," Discovery Reports, vol. 15, p. 1-124.

Guilcher, André, 1958, Coastal and Submarine Morphology translated by B. W. Sparks and R. H. W. Kneese. London: Methuen; New York: Wiley. 274 p.

Jacobs, J. A., Russell, R. D., and Wilson, J. Tuzo, 1959, Physics and Geology. New York: McGraw-Hill. 424 p.

Keller, Fred, Jr., Meuschke, J. L., and Alldredge, L. R., 1954, "Aeromagnetic Surveys in the Aleutian, Marshall, and Bermuda Islands," Transactions, American Geophysical Union, vol. 35, no. 4, p. 558-572.

Mason, Ronald G., and Raff, Arthur D., 1961, "Magnetic Survey off the West Coast of North America, 32°N Latitude to 42°N Latitude," Geological Society of America Bulletin, vol. 72, no. 8, p. 1259-1266.

Midttun, Lars, and Natvig, Johan, 1957, "Pacific Antarctic Waters," Scientific Results of the 'Brategg' Expedition 1947-48, nr. 3. Publ. nr. 20 fra Kommandør Chr. Christensens Hvalfangstmuseum i Sandefjord, Bergen.

Mosby, Håkon, 1934, "The Waters of the Atlantic Antarctic Ocean," Det Norske Videnskaps-Akademi i Oslo, Scientific Results of the Norwegian Antarctic Expeditions 1927-1928 et seq., no. 11, 131 p.

Raff, Arthur D., and Mason, Ronald G., 1961, "Magnetic Survey off the West Coast of North America, 40°N Latitude to 52°N Latitude," Geological Society of America Bulletin, vol. 72, no. 8, p. 1267-1270.

APPENDIX A

OCEANOGRAPHIC STATION DATA

SHIP	NODC REFERENCE NO.
USS STATEN ISLAND	00672
USS EDISTO	00674

OCEANOGRAPHIC STATION INDEX

NODC Reference No. 00672

Sta. No.	Page	Consec.* Sta.No.	Sta. No.	Page	Consec.* Sta.No.	Sta. No.	Page	Consec.* Sta.No.
2	122	1	28	147	28	54	173	53
3	123	5	29	148	26	55	174	54
4	124	6	30	149	24	56	175	55
5	125	7	31	150	23	57	176	56
6	126	8	32	151	30	58	177	57
7	127	9	33	152	32	59	178	58
8	128	10	34	153	33	60	179	59
9	129	11	35	154	34	61	180	60
10	130	12	36	155	35	62	181	61
11	131	13	37	156	36	63	182	62
12	132	2	38	157	37	64	183	63
13	133	4	39	158	38	65	184	64
14	134	3	40	159	39	66	185	65
15	135	14	41	160	40	67	186	66
16	135	15	42	161	41	68	187	67
17	136	16	43	162	42	69	188	68
18	137	17	44	163	43	70	189	69
19	138	18	45	164	44	71	190	70
20	139	19	46	165	45	72	191	71
21	140	20	47	166	46	73	192	72
22	141	21	48	167	47	74	193	73
23	142	22	49	168	48	75	194	74
24	143	25	50	169	49	76	195	75
25	144	27	51	170	50	77	196	76
26	145	31	52	171	51	78	197	77
27	146	29	53	172	52	79	198	78

NODC Reference No. 00674
(Ice Prediction Stations)

IP14	199	1	IP19	201	10	IP24	204	14
IP15	199	2	IP20	202	11	IP25	204	8
IP16	200	3	IP21	202	13	IP26	205	7
IP17	200	4	IP22	203	12	IP27	205	6
IP18	201	9	IP23	203	15	IP28	206	5

* Consecutive Station Number. At NODC (National Oceanographic Data Center) oceanographic stations are numbered consecutively in the chronological order in which they were occupied. Consecutive station number and Cruise Reference Number are required by NODC to identify a station.

EXPLANATION OF OCEANOGRAPHIC STATION DATA

A. General

Each of the items appearing on the data pages is explained below. The vertical arrows shown in some of the column headings indicate the location of decimal points. The presence of asterisks to the right of data indicates those data are doubtful; hence, they were not used in the construction of the curve from which interpolated values (standard depth values) were derived. Observed values which were obviously invalid were omitted entirely.

B. Surface Observations

1. NODC Reference Number. This number is arbitrarily assigned. It identifies the cruise and provides a means of sorting from the IBM files all cards pertaining to that particular cruise. A cruise reference number for each ship is presented on the flysheet for the tabulated oceanographic data.

2. Station Number. Stations are numbered to designate a certain station location. See Figure 2, page 3, and Oceanographic Station Index, page 114.

3. Date. Month and day are given in Arabic numerals. The last three figures of the year are indicated. The hour is Greenwich Mean Time and is that hour nearest to the start of the first cast.

4. Latitude and Longitude. The position of the station is given in degrees and minutes.

5. Sonic Depth. Sonic Depth is the uncorrected sounding for the station, recorded in meters.

6. Maximum Sample Depth. The maximum depth from which a water sample was obtained at the station is given to the nearest 100 meters.

7. Wind. Wind speed is given in meters per second. Direction from which the wind blows is coded in degrees true to the nearest ten degrees. The last zero is omitted. North is 36 on this scale and calm is 0. See Table 1, Compass Direction Conversion Table for Wind, Sea, and Swell Directions.

8. Anemometer Height. The height of the anemometer above the waterline is given in meters.

9. Air Pressure. Barometric pressure is coded in millibars, neglecting the 900 or 1000. Thus, 966 millibars is coded as 96 and 1008 millibars is coded as 08.

10. Air Temperature. Dry bulb and wet bulb temperatures are entered to the nearest tenth of a degree Celsius (°C). A negative temperature is coded by dropping the minus sign and adding 50; thus -10° is coded as 60.

11. Humidity. The percent of humidity is coded directly, 100 percent being coded as 99.

12. Weather. Weather is coded as indicated in Table 2, Numerical Weather Codes - Present Weather.

13. Cloud. Cloud type and amount are coded as indicated in Tables 3, Cloud Type, and 4, Cloud Amount.

14. Sea. Sea direction and amount are coded as indicated in Tables 1 and 5, respectively.

15. Swell. Swell direction and amount are coded as indicated in Tables 1 and 6, respectively.

16. Visibility. Visibility is coded as indicated in Table 7, Visibility.

17. Water. Color is coded as indicated in Table 8, Water Color. Transparency is coded in whole meters from observations taken with a white Secchi disc (30 cm dia.).

C. Subsurface Observations

1. Sample Depth. Observed (actual) depth of each sample is given in meters. Interpolated values at standard depths are also given. The standard depths, in meters, are: 0, 10, 20, 30, 50, 75, 100, 150, 200, 250, 300, 400, 500, 600, 800, 1000, 1200, 1500, 2000, 2500, 3000, and thence every 1000 meters.

2. Temperature. The Celsius (°C) temperature is given in degrees and hundredths.

3. Salinity. Salinity is given in parts per thousand (by weight) to two decimal places.

4. Sigma-t. To convert to density divide by 1000 and add 1. Thus, a sigma-t value of 22.35 converts to a density of 1.02235.

5. Delta-D. The values in the columns are the anomalies of dynamic depths from the surface to each level in dynamic meters. Each entry is the cumulative sum of the anomalies of dynamic depth of the layer above. These values have been computed for the standard depths only, and serve to identify computed points.

6. Dissolved Oxygen. These values when given are in milliliters per liter to two decimal places. Values of 10.00 or above rarely occur and are coded as 9.99.

7. Sound Velocity[1]. Sound velocity is given in feet per second to one decimal place, corrected for pressure at each depth. See footnote 1 on page 5.

TABLE 1. COMPASS DIRECTION CONVERSION TABLE FOR WIND, SEA, AND SWELL DIRECTIONS

Code	Direction	Code	Direction
00	Calm	19	185° to 194°
01	5° to 14°	20	195° to 204° SSW
02	15° to 24° NNE	21	205° to 214°
03	25° to 34°	22	215° to 224°
04	35° to 44°	23	225° to 234° SW
05	45° to 54° NE	24	235° to 244°
06	55° to 64°	25	245° to 254° WSW
07	65° to 74° ENE	26	255° to 264°
08	75° to 84°	27	265° to 274° W
09	85° to 94° E	28	275° to 284°
10	95° to 104°	29	285° to 294° WNW
11	105° to 114° ESE	30	295° to 304°
12	115° to 124°	31	305° to 314°
13	125° to 134°	32	315° to 324° NW
14	135° to 144° SE	33	325° to 334°
15	145° to 154°	34	335° to 344° NNW
16	155° to 164° SSE	35	345° to 354°
17	165° to 174°	36	355° to 4° N
18	175° to 184° S	99	Variable or unknown

TABLE 2. NUMERICAL WEATHER CODES—PRESENT WEATHER

00 Cloud development NOT observed or NOT observable during past hour	01 Clouds generally dissolving or becoming less developed during past hour	02 State of sky on the whole unchanged during past hour.	03 Clouds generally forming or developing during past hour.	04 Visibility reduced by smoke.	05 Haze.	06 Widespread dust in suspension in the air, NOT raised by wind, at time of observation.	07 Dust or sand raised by wind, at time of observation.	08 Well developed dust devil(s) within past hour.	09 Duststorm or sandstorm within sight of or at station during past hour.
10 Light fog.	11 Patches of shallow fog at station, NOT deeper than 6 feet on land.	12 More or less continuous shallow fog at station, NOT deeper than 6 feet on land.	13 Lightning visible, no thunder heard.	14 Precipitation within sight, but NOT reaching the ground.	15 Precipitation within sight, reaching the ground, but distant from station.	16 Precipitation within sight, reaching the ground, near to but NOT at station.	17 Thunder heard, but no precipitation at the station.	18 Squall(s) within sight during past hour.	19 Funnel cloud(s) within sight during past hour.
20 Drizzle (NOT freezing and NOT falling as showers) during past hour, but NOT at time of ob	21 Rain (NOT freezing and NOT falling as showers) during past hour, but NOT at time of ob	22 Snow (NOT falling as showers) during past hour, but NOT at time of observation	23 Rain and snow (NOT falling as showers) during past hour, but NOT at time of observation	24 Freezing drizzle or freezing rain (NOT falling as showers) during past hour, but NOT at time of observation.	25 Showers of rain during past hour, but NOT at time of observation.	26 Showers of snow, or of rain and snow, during past hour, but NOT at time of observation.	27 Showers of hail, or of hail and rain, during past hour, but NOT at time of observation.	28 Fog during past hour, but NOT at time of observation.	29 Thunderstorm (with or without precipitation) during past hour, but NOT at time of observation.
30 Slight or moderate duststorm or sandstorm has decreased during past hour.	31 Slight or moderate duststorm or sandstorm no appreciable change during past hour	32 Slight or moderate duststorm or sandstorm has increased during past hour.	33 Severe duststorm or sandstorm, has decreased during past hour.	34 Severe duststorm or sandstorm, no appreciable change during past hour.	35 Severe duststorm or sandstorm, has increased during past hour.	36 Slight or moderate drifting snow, generally low.	37 Heavy drifting snow, generally low.	38 Slight or moderate drifting snow, generally high.	39 Heavy drifting snow, generally high.
40 Fog at distance at time of observation, but NOT at station during past hour.	41 Fog in patches.	42 Fog, sky discernible, has become thinner during past hour.	43 Fog, sky NOT discernible, has become thinner during past hour.	44 Fog, sky discernible, no appreciable change during past hour.	45 Fog, sky NOT discernible no appreciable change during past hour.	46 Fog, sky discernible, has begun or become thicker during past hour.	47 Fog, sky NOT discernible, has begun or become thicker during past hour.	48 Fog, depositing rime, sky discernible.	49 Fog, depositing rime, sky not discernible.
50 Intermittent drizzle (NOT freezing) slight at time of observation.	51 Continuous drizzle (NOT freezing) slight at time of observation.	52 Intermittent drizzle (NOT freezing) moderate at time of ob.	53 Continuous drizzle (NOT freezing), moderate at time of ob.	54 Intermittent drizzle (NOT freezing), thick at time of observation.	55 Continuous drizzle (NOT freezing), thick at time of observation.	56 Slight freezing drizzle.	57 Moderate or thick freezing drizzle.	58 Drizzle and rain, slight.	59 Drizzle and rain, moderate or heavy.
60 Intermittent rain (NOT freezing), slight at time of observation.	61 Continuous rain (NOT freezing), slight at time of observation.	62 Intermittent rain (NOT freezing), moderate at time of ob.	63 Continuous rain (NOT freezing), moderate at time of observation.	64 Intermittent rain (NOT freezing), heavy at time of observation.	65 Continuous rain (NOT freezing), heavy at time of observation.	66 Slight freezing rain.	67 Moderate or heavy freezing rain.	68 Rain or drizzle and snow, slight.	69 Rain or drizzle and snow, moderate or heavy.
70 Intermittent fall of snowflakes, sight at time of observation.	71 Continuous fall of snowflakes, slight at time of observation.	72 Intermittent fall of snowflakes, moderate at time of observation.	73 Continuous fall of snowflakes, moderate at time of observation.	74 Intermittent fall of snowflakes, heavy at time of observation.	75 Continuous fall of snowflakes, heavy at time of observation.	76 Ice needles (with or without fog).	77 Granular snow (with or without fog).	78 Isolated starlike snow crystals (with or without fog).	79 Ice pellets (sleet, U. S. definition).
80 Slight rain shower(s).	81 Moderate or heavy rain shower(s).	82 Violent rain shower(s).	83 Slight shower(s) of rain and snow mixed.	84 Moderate or heavy shower(s) of rain and snow mixed.	85 Slight snow shower(s).	86 Moderate or heavy snow shower(s).	87 Slight shower(s) of soft or small hail with or without rain or rain and snow mixed.	88 Moderate or heavy shower(s) of soft or small hail with or without rain or rain and snow mixed.	89 Slight shower(s) of hail, with or without rain or rain and snow mixed, not associated with thunder.
90 Moderate or heavy shower(s) of hail, with or without rain or rain and snow mixed, not associated with thunder.	91 Slight rain at time of ob.; thunderstorm during past hour, but NOT at time of observation.	92 Moderate or heavy rain at time of ob.; thunderstorm during past hour, but NOT at time of observation.	93 Slight snow or rain and snow mixed or hail at time of observation.; thunderstorm during past hour, but not at time of observations.	94 Mod. or heavy snow, or rain and snow mixed or hail at time of ob.; thunderstorm during past hour, but NOT at time of observation.	95 Slight or mod. thunderstorm without hail, but with rain and/or snow at time of observation.	96 Slight or moderate thunderstorm, with hail at time of observation.	97 Heavy thunderstorm, without hail, but with rain and/or snow at time of observation.	98 Thunderstorm combined with duststorm or sandstorm at time of observation.	99 Heavy thunderstorm with hail at time of observation.

TABLE 3. CLOUD TYPE

Code	
0	Stratus or Fractostratus
1	Cirrus
2	Cirrostratus
3	Cirrocumulus
4	Altocumulus
5	Altostratus
6	Stratocumulus
7	Nimbostratus
8	Cumulus or Fractocumulus
9	Cumulonimbus

TABLE 4. CLOUD AMOUNT

Code	
0	No clouds
1	Less than 1/10 or 1/10
2	2/10 and 3/10
3	4/10
4	5/10
5	6/10
6	7/10 and 8/10
7	9/10 and 9/10 plus
8	10/10
9	Sky obscured

TABLE 5. SEA AMOUNT

Code	Mean Max. Height of Sea Waves in feet (Approx.)	Description
0	0	Calm (glassy)
1	0 - 1/3	Calm (rippled)
2	1/3 - 1 2/3	Smooth (wavelets)
3	1 2/3 - 4	Slight
4	4 - 8	Moderate
5	8 - 13	Rough
6	13 - 20	Very rough
7	20 - 30	High
8	30 - 45	Very high
9	over 45	Phenomenal+

+ As might be expected in center of hurricane

TABLE 6. SWELL AMOUNT

Code	Approximate Height (feet)	Description		Approximate Length (feet)
0	----	No swell		----
1	1 to 6	Low swell	Short or Average	0 to 600
2			Long	Above 600
3	6 to 12	Moderate	Short	0 to 300
4			Average	300 to 600
5			Long	Above 600
6	Greater than 12	High	Short	0 to 300
7			Average	300 to 600
8			Long	Above 600
9	----	Confused		----

TABLE 7. VISIBILITY

Code		
0	Dense fog	50 yards
1	Thick fog	200 yards
2	Fog	400 yards
3	Moderate fog	1000 yards
4	Thin fog or mist	1 mile
5	Visibility poor	2 miles
6	Visibility moderate	5 miles
7	Visibility good	10 miles
8	Visibility very good	30 miles
9	Visibility excellent	Over 30 miles

TABLE 8. WATER COLOR

Code	(Percent yellow)	Description
00		Deep blue
10		Blue
20		Greenish-blue (or green blue)
30		Bluish-green (or blue green)
40		Green
50		Light Green
60		Yellowish-green
70		Yellow green
80		Green yellow
90		Greenish-yellow
99		Yellow

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0002	12	21	1960	04	78° 08′ S	162° 50′ W	0640	06

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
06	15		94	56 7	57 5	73	02	6	1	10	3			8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 26	34 28	27 60	0 000	7 74	4719 9
OBS	0000	-01 26	34 28	27 60		7 74	4719 9
STD	0010	-01 25	34 28	27 60	0 005	7 33	4720 6
OBS	0010	-01 25	34 28	27 60		7 33	4720 6
STD	0020	-01 35	34 30	27 62	0 010	7 33	4719 7
OBS	0020	-01 35	34 30	27 62		7 33	4719 7
STD	0030	-01 42	34 32	27 64	0 015	7 32	4719 3
STD	0050	-01 53	34 34	27 66	0 024	7 27	4718 8
OBS	0050	-01 53	34 34	27 66		7 27	4718 8
STD	0075	-01 62	34 36	27 67	0 034	7 14	4719 0
OBS	0075	-01 62	34 36	27 67		7 14	4719 0
STD	0100	-01 79	34 39	27 70	0 045	6 65	4717 9
OBS	0100	-01 79	34 39	27 70		6 65	4717 9
STD	0150	-01 77	34 44	27 74	0 063	6 57	4721 4
OBS	0150	-01 77	34 44	27 74		6 57	4721 4
STD	0200	-01 77	34 48	27 78	0 080	6 35	4724 6
OBS	0200	-01 77	34 48	27 78		6 35	4724 6
STD	0250	-01 81	34 49	27 79	0 096	6 37	4727 0
OBS	0250	-01 81	34 49	27 79		6 37	4727 0
STD	0300	-01 87	34 51	27 80	0 111	6 33	4729 1
OBS	0300	-01 87	34 51	27 80		6 33	4729 1
OBS	0350	-01 85	34 51	27 80		6 33	4732 4
STD	0400	-01 83	34 53	27 82	0 139	6 14	4735 7
OBS	0400	-01 83	34 53	27 82		6 14	4735 7
OBS	0440	-01 85					
OBS	0490	-01 84					
STD	0500	-01 84					
OBS	0540	-01 73*					
OBS	0590	-01 83					
STD	0600	-01 83					
OBS	0630	-01 82					

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0003	12	22	1960	05	77° 24′ S	162° 06′ W	0668	06

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
15	15		90	55 0	55 6	86	03	1	3	16	3			8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 31	34 30	27 62	0 000	7 58	4719 2
OBS	0000	-01 31	34 30	27 62		7 58	4719 2
OBS	0008	-01 32	34 30	27 62		7 56	4719 5
STD	0010	-01 32	34 30	27 62	0 005	7 58	4719 6
OBS	0017	-01 32	34 30	27 62		7 60	4720 0
STD	0020	-01 33	34 29	27 61	0 010	7 59	4720 0
OBS	0026	-01 34	34 28	27 60		7 56	4720 2
STD	0030	-01 34	34 28	27 60	0 015	7 55	4720 4
OBS	0043	-01 36	34 30	27 62		7 50	4720 9
STD	0050	-01 42	34 32	27 64	0 024	7 50	4720 5
OBS	0064	-01 49	34 34	27 65			4720 3
STD	0075	-01 49	34 34	27 65	0 035	7 42	4721 0
OBS	0086	-01 49	34 35	27 66		7 33	4721 7
STD	0100	-01 63	34 36	27 67	0 046	7 07	4720 3
OBS	0129	-01 81	34 38	27 70		6 70	4719 3
STD	0150	-01 82	34 41	27 72	0 066	6 64	4720 5
OBS	0173	-01 83	34 44	27 74		6 58	4721 8
STD	0200	-01 87	34 45	27 75	0 084	6 51	4722 9
OBS	0217	-01 88	34 46	27 76		6 49	4723 8
STD	0250	-01 86	34 47	27 77	0 101	6 49	4726 1
OBS	0261	-01 85	34 48	27 78		6 49	4726 9
STD	0300	-01 85	34 49	27 79	0 116	6 44	4729 3
OBS	0351	-01 85	34 51*	27 80*			4732 4*
OBS	0355	-01 85	34 50	27 79		6 39	4732 6
STD	0400	-01 83	34 51	27 80	0 146	6 38	4735 6
OBS	0400	-01 83	34 51	27 80		6 38	4735 6
OBS	0443		34 52			6 35	
OBS	0488	-01 87	34 51	27 80			4740 2
STD	0500	-01 87	34 51	27 80	0 174	6 32	4741 0
OBS	0533		34 51			6 31	
OBS	0578	-01 87	34 52	27 81		6 33	4745 6

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0004	12	22	1960	11	76° 57′ S	162° 21′ W	0604	05

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
11	15		87	53 4	53 9	87	02	6	8	16	3			8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma\Delta D$ ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 25	34 26	27 58	0 000	7 30	4719 9
OBS	0000	-01 25	34 26	27 58		7 30	4719 9
OBS	0009	-01 24	34 26	27 58		7 30	4720 6
STD	0010	-01 24	34 26	27 58	0 005	7 30	4720 7
OBS	0019	-01 23	34 26	27 58		7 30	4721 4
STD	0020	-01 23	34 26	27 58	0 010	7 28	4721 4
OBS	0028	-01 26	34 26	27 58		7 18	4721 4
STD	0030	-01 26	34 26	27 58	0 015	7 18	4721 6
OBS	0047	-01 25	34 30	27 61		7 14	4722 9
STD	0050	-01 31	34 32	27 63	0 025	7 10	4722 2
OBS	0071	-01 61	34 40	27 71		6 88	4719 1
STD	0075	-01 63	34 40	27 71	0 036	6 87	4719 0
OBS	0095	-01 70	34 41	27 72		6 81	4719 1
STD	0100	-01 72	34 41	27 72	0 046	6 77	4719 1
OBS	0143	-01 84	34 44	27 75		6 53	4719 9
STD	0150	-01 84	34 44	27 75	0 064	6 52	4720 3
OBS	0191	-01 85	34 45	27 75		6 48	4722 6
STD	0200	-01 86	34 45	27 75	0 081	6 46	4723 0
OBS	0240	-01 87	34 47	27 77		6 41	4725 3
STD	0250	-01 86	34 48	27 78	0 098	6 41	4726 1
OBS	0288	-01 85	34 49	27 79		6 39	4728 6
STD	0300	-01 85	34 49	27 79	0 113	6 37	4729 3
OBS	0326	-01 86	34 49	27 79		6 33	4730 7
OBS	0387	-01 87	34 50	27 79		6 33	4734 2
STD	0400	-01 85	34 50	27 79	0 143	6 33	4735 3
OBS	0424	-01 83	34 50	27 79		6 33	4737 0
OBS	0473	-01 87	34 51	27 80		6 29	4739 3
STD	0500	-01 88	34 52	27 81	0 171	6 27	4740 8
OBS	0548	-01 88	34 53	27 82		6 24	4743 7

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0005	12	22	1960	15	76° 32′ S	162° 30′ W	0460	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
08	15		83	51 9	52 2	93	73	0	8	16	4			4		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 31	34 27	27 59	0 000	7 40	4719 0
OBS	0000	-01 31	34 27	27 59		7 40	4719 0
STD	0010	-01 31	34 27	27 59	0 005	7 39	4719 6
OBS	0010	-01 31	34 27	27 59		7 39	4719 6
STD	0020	-01 30	34 27	27 59	0 010	7 38	4720 4
OBS	0020	-01 30	34 27	27 59		7 38	4720 4
OBS	0029	-01 34	34 27	27 59		7 38	4720 3
STD	0030	-01 35	34 27	27 59	0 015	7 36	4720 2
OBS	0049	-01 51	34 30	27 62		6 96	4718 9
STD	0050	-01 52	34 30	27 62	0 025	6 93	4718 8
OBS	0073	-01 72	34 34	27 66		6 44	4717 2
STD	0075	-01 72	34 34	27 66	0 036	6 44	4717 3
OBS	0098	-01 73	34 37	27 69		6 44	4718 7
STD	0100	-01 72	34 37	27 69	0 047	6 43	4718 9
OBS	0147	-01 55	34 37	27 68		6 35	4724 4
STD	0150	-01 56	34 37	27 68	0 067	6 36	4724 5
OBS	0196		34 42			6 44	
STD	0200	-01 62	34 42	27 72	0 087	6 44	4726 7
OBS	0245	-01 68	34 44	27 74		6 44	4728 5
STD	0250	-01 67	34 44	27 74	0 105	6 42	4729 0
OBS	0294	-01 54	34 47	27 76		6 24	4733 8
STD	0300	-01 52	34 47	27 76	0 122	6 22	4734 4
OBS	0392	-01 24	34 54	27 81		5 90	4744 6

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0006	12	22	1960	20	76° 05′ S	162° 45′ W	2561	25

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
			80	50 6	51 1	89	71	6	8	16	2			7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ O ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 26	34 26	27 58	0 000	7 21	4719 8
OBS	0000	-01 26	34 26	27 58		7 21	4719 8
STD	0010	-01 34	34 26	27 59	0 005	7 24	4719 1
OBS	0010	-01 34	34 26	27 59		7 24	4719 1
STD	0020	-01 32	34 27	27 59	0 010	7 25	4720 1
OBS	0020	-01 32	34 27	27 59		7 25	4720 1
STD	0030	-01 37	34 26	27 59	0 015	7 21	4719 8
OBS	0030	-01 37	34 26	27 59		7 21	4719 8
STD	0050	-01 77	34 27	27 61	0 025	6 88	4714 7
OBS	0050	-01 77	34 27	27 61		6 88	4714 7
STD	0075	-01 78	34 29	27 62	0 037	6 46	4716 2
OBS	0075	-01 78	34 29	27 62		6 46	4716 2
STD	0100	-01 72	34 30	27 63	0 049	6 44	4718 6
OBS	0100	-01 72	34 30	27 63		6 44	4718 6
STD	0150	-01 71	34 32	27 64	0 072	6 44	4721 9
OBS	0150	-01 71	34 32	27 64		6 44	4721 9
STD	0200	-01 70	34 33	27 65	0 094	6 21	4725 0
OBS	0200	-01 70	34 33	27 65		6 21	4725 0
STD	0250	-01 68	34 40	27 71	0 114	6 22	4728 6
OBS	0250	-01 68	34 40	27 71		6 22	4728 6
STD	0300	-00 85	34 41	27 69	0 134	5 85	4744 7
OBS	0300	-00 85	34 41	27 69		5 85	4744 7
STD	0400	00 68	34 59	27 76	0 172	4 72	4774 8
OBS	0400	00 68	34 59	27 76		4 72	4774 8
STD	0500	01 42	34 71	27 80	0 206	4 24	4792 2
OBS	0500	01 42	34 71	27 80		4 24	4792 2
STD	0600	01 38	34 73	27 82	0 237	4 25	4797 7
OBS	0750	01 28	34 74	27 84		4 26	4805 2
STD	0800	01 23	34 74	27 84	0 297	4 29	4807 4
STD	1000	01 04	34 73	27 85	0 354	4 40	4816 4
OBS	1000	01 04	34 73	27 85		4 40	4816 4
STD	1200	00 90	34 72	27 85	0 412	4 45	4826 2
STD	1500	00 77	34 71	27 85	0 498	4 54	4842 0
OBS	1500	00 77	34 71	27 85		4 54	4842 0
STD	2000		34 71			4 69	
OBS	2000		34 71			4 69	
STD	2500		34 71			4 65	
OBS	2500		34 71			4 65	

SURFACE OBSERVATIONS									
NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0007	12	23	1960	04	75° 25′ S	162° 08′ W	3383	30

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
04	36		83	50 3	50 8	89	71	6	8	00	0			7		

	SUBSURFACE OBSERVATIONS													
	SAMPLE DEPTH (M)	T °C ↓		S‰ ↓		σ_t ↓		$\Sigma\Delta D$ ↓		O_2 ml/l ↓		V_f ↓	
STD	0000	-01	31	34	21	27	54	0	000	7	58	4718	8
OBS	0000	-01	31	34	21	27	54			7	58	4718	8
STD	0010	-01	30	34	21	27	54	0	006	7	61	4719	5
OBS	0010	-01	30	34	21	27	54			7	61	4719	5
STD	0020	-01	37	34	23	27	56	0	011	7	42	4719	1
OBS	0020	-01	37	34	23	27	56			7	42	4719	1
STD	0030	-01	50	34	25	27	58	0	016	7	21	4717	7
OBS	0030	-01	50	34	25	27	58			7	21	4717	7
STD	0050	-01	59	34	25	27	58	0	026	7	11	4717	5
OBS	0050	-01	59	34	25	27	58			7	11	4717	5
STD	0075	-01	84	34	28	27	62	0	039	6	60	4715	2
OBS	0075	-01	84	34	28	27	62			6	60	4715	2
STD	0100	-01	77	34	28	27	61	0	051	6	46	4717	8
OBS	0100	-01	77	34	28	27	61			6	46	4717	8
STD	0150	-01	74	34	29	27	62	0	074	6	44	4721	3
OBS	0150	-01	74	34	29	27	62			6	44	4721	3
STD	0200	-01	55	34	31	27	63	0	098	6	31	4727	3
OBS	0200	-01	55	34	31	27	63			6	31	4727	3
STD	0250	-01	38	34	33	27	64	0	120	6	17	4733	1
OBS	0250	-01	38	34	33	27	64			6	17	4733	1
STD	0300	-00	90	34	37	27	66	0	142	5	86	4743	7
OBS	0300	-00	90	34	37	27	66			5	86	4743	7
STD	0400	00	40	34	53	27	73	0	183	4	92	4770	3
OBS	0400	00	40	34	53	27	73			4	92	4770	3
OBS	0497	01	41	34	71	27	81			4	24	4791	9
STD	0500	01	41	34	71	27	81	0	218	4	24	4792	1
OBS	0596	01	35	34	72	27	82			4	22	4796	9
STD	0600	01	34	34	72	27	82	0	249	4	22	4797	0
OBS	0795	01	12	34	72	27	83			4	38	4805	4
STD	0800	01	12	34	72	27	83	0	310	4	38	4805	7
OBS	0994	00	97										
STD	1000	00	97	34	71	27	84	0	369	4	40	4815	3
OBS	1192	00	84	34	71	27	84			4	48	4824	8
STD	1200	00	84	34	71	27	84	0	428	4	49	4825	3
OBS	1491	00	72	34	71	27	85			4	71	4840	7
STD	1500	00	72	34	71	27	85	0	513	4	71	4841	3
OBS	1988	00	59	34	71	27	86			4	62	4868	3
STD	2000	00	59	34	71	27	86	0	652	4	62	4869	0
OBS	2486	00	48	34	71	27	87			4	68	4896	2
STD	2500	00	48	34	71	27	87	0	787	4	68	4897	0
OBS	2984	00	43	34	70	27	86			4	73	4924	8

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0008	12	23	1960	14	75° 25′ S	160° 11′ W	3420	30

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
03	02		88	52 9	53 3	88	02	1	6					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma\Delta D$ ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 78	34 13	27 49	0 000	7 31	4711 0
OBS	0000	-01 78	34 13	27 49		7 31	4711 0
STD	0010	-01 78	34 13	27 49	0 006	7 31	4711 6
OBS	0010	-01 78	34 13	27 49		7 31	4711 6
STD	0020	-01 76	34 25	27 59	0 012	7 04	4713 0
OBS	0020	-01 76	34 25	27 59		7 04	4713 0
STD	0030	-01 84	34 26	27 60	0 017	6 86	4712 4
OBS	0030	-01 84	34 26	27 60		6 86	4712 4
STD	0050	-01 87	34 27	27 61	0 026	6 76	4713 2
OBS	0050	-01 87	34 27	27 61		6 76	4713 2
STD	0075	-01 86	34 28	27 62	0 038	6 51	4714 8
OBS	0075	-01 86	34 28	27 62		6 51	4714 8
STD	0100	-01 81	34 29	27 62	0 050	6 62	4717 2
OBS	0100	-01 81	34 29	27 62		6 62	4717 2
STD	0150	-01 64	34 31	27 63	0 074	6 42	4722 9
OBS	0150	-01 64	34 31	27 63		6 42	4722 9
STD	0200	-01 19	34 35	27 65	0 096	6 14	4733 2
OBS	0200	-01 19	34 35	27 65		6 14	4733 2
STD	0250	-00 65	34 42	27 69	0 117	5 69	4744 8
OBS	0250	-00 65	34 42	27 69		5 69	4744 8
STD	0300	00 48	34 54	27 73	0 137	4 87	4765 6
OBS	0300	00 48	34 54	27 73		4 87	4765 6
STD	0400	01 45	34 69	27 79	0 172	4 25	4786 6
OBS	0400	01 45	34 69	27 79		4 25	4786 6
OBS	0496	01 48	34 73	27 82		4 21	4793 0
STD	0500	01 48	34 73	27 82	0 205	4 20	4793 2
OBS	0595	01 43	34 73	27 82		4 03	4798 1
STD	0600	01 42	34 73	27 82	0 236	4 04	4798 3
OBS	0794	01 24	34 72	27 83		4 38	4807 1
STD	0800	01 24	34 72	27 83	0 297	4 38	4807 5
OBS	0992	01 08	34 72	27 84		4 33	4816 5
STD	1000	01 07	34 72	27 84	0 358	4 31	4816 8
OBS	1190	00 91	34 71	27 84		4 08	4825 7
STD	1200	00 91	34 71	27 84	0 417	4 10	4826 3
OBS	1488		34 71			4 61	
STD	1500	00 78	34 71	27 85	0 504	4 60	4842 2
OBS	1985	00 62	34 71	27 86		4 52	4868 6
STD	2000	00 61	34 71	27 86	0 645	4 53	4869 3
OBS	2483	00 49	34 70	27 86		4 72	4896 1
STD	2500	00 49	34 70	27 86	0 782	4 72	4897 1
OBS	2982	00 45	34 70	27 86		4 76	4925 0

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0009	12	24	1960	00	75° 56′ S	160° 41′ W	3017	08

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
12	09		85	51 1	51 6	88	71	6	8	08	3			7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ ΔD ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 12				7 56	
OBS	0000	-01 12				7 56	
OBS	0009	-01 14				7 57	
STD	0010	-01 13				7 57	
OBS	0017	-01 12				7 56	
STD	0020	-01 12				7 54	
OBS	0026	-01 17				7 51	
STD	0030	-01 36				7 33	
OBS	0043	-01 79				6 88	
STD	0050	-01 79				6 77	
OBS	0065	-01 80				6 61	
STD	0075	-01 80				6 60	
OBS	0086	-01 79				6 59	
STD	0100	-01 79				6 55	
OBS	0129	-01 80				6 52	
STD	0150	-01 81				6 58	
OBS	0172	-01 82				6 61	
STD	0200	-01 81				6 58	
OBS	0215	-01 80				6 56	
STD	0250	-01 76				6 50	
OBS	0259	-01 75				6 48	
STD	0300	-01 62				6 42	
OBS	0348	-01 47				6 36	
OBS	0375	-00 44				5 48	
STD	0400	00 13				5 10	
OBS	0450	01 00				4 53	
STD	0500	01 19				4 41	
STD	0600	01 40				4 27	
OBS	0600	01 40				4 27	
OBS	0755	01 28				4 28	

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0010	12	24	1960	09	76° 28′ S	160° 29′ W	0421	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
14	09		78	51 7	52 2	88	43		9	10	4			5		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 25	34 20	27 53	0 000	7 45	4719 7
OBS	0000	-01 25	34 20	27 53		7 45	4719 7
OBS	0009	-01 26	34 19	27 53		7 42	4720 0
STD	0010	-01 25	34 19	27 53	0 006	7 43	4720 2
OBS	0017	-01 22	34 20	27 53		7 46	4721 2
STD	0020	-01 24	34 20	27 53	0 011	7 46	4721 0
OBS	0026	-01 29	34 20	27 54		7 44	4720 6
STD	0030	-01 32	34 20	27 54	0 017	7 44	4720 4
OBS	0043	-01 44	34 22	27 56		7 29	4719 3
STD	0050	-01 55	34 26	27 59	0 027	6 98	4718 2
OBS	0065	-01 70	34 31	27 64		6 54	4716 9
STD	0075	-01 68	34 33	27 65	0 039	6 49	4717 9
OBS	0087	-01 67	34 34	27 66		6 45	4718 8
STD	0100	-01 69	34 34	27 66	0 050	6 47	4719 3
OBS	0132	-01 72	34 33	27 65		6 50	4720 7
STD	0150	-01 71	34 34	27 66	0 072	6 48	4721 9
OBS	0178	-01 70	34 35	27 67		6 46	4723 8
STD	0200	-01 71	34 35	27 67	0 093	6 44	4725 0
OBS	0224	-01 72	34 36	27 68		6 43	4726 3
STD	0250	-01 71	34 36	27 68	0 114	6 42	4728 0
OBS	0271	-01 70	34 36	27 68		6 41	4729 4
STD	0300	-01 56	34 37	27 68	0 135	6 31	4733 4
OBS	0366	-00 90	34 43	27 71		5 85	4747 9

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0011	12	24	1960	13	77° 00′ S	160° 40′ W	0448	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
12	11		77	51 1	51 7	88	47		9	10	4			5		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_t ↓
STD	0000	-01 23	34 24	27 57	0 000	7 53	4720 2
OBS	0000	-01 23	34 24	27 57		7 53	4720 2
STD	0010	-01 24	34 24	27 57	0 005	7 53	4720 6
OBS	0010	-01 24	34 24	27 57		7 53	4720 6
STD	0020	-01 20	34 23	27 56	0 011	7 53	4721 8
OBS	0020	-01 20	34 23	27 56		7 53	4721 8
STD	0030	-01 25	34 24	27 57	0 016	7 50	4721 6
OBS	0030	-01 25	34 24	27 57		7 50	4721 6
STD	0050	-01 42	34 25	27 58	0 026	7 46	4720 2
OBS	0050	-01 25*	34 25	27 57*		7 46	4722 9*
STD	0075	-01 57	34 30	27 62	0 039	7 24	4719 5
OBS	0075	-01 57	34 30	27 62		7 24	4719 5
STD	0100	-01 66	34 35	27 67	0 050	6 80	4719 8
OBS	0100	-01 66	34 35	27 67		6 80	4719 8
STD	0150	-01 68	34 36	27 68	0 071	6 51	4722 5
OBS	0150	-01 68	34 36	27 68		6 51	4722 5
STD	0200	-01 52	34 40	27 70	0 091	6 38	4728 2
OBS	0200	-01 52	34 40	27 70		6 38	4728 2
STD	0250	-01 00	34 45	27 73	0 110	6 20	4739 5
OBS	0250	-01 00	34 45	27 73		6 20	4739 5
STD	0300	-01 34	34 46	27 75	0 128	6 12	4737 2
OBS	0300	-01 34	34 46	27 75		6 12	4737 2
STD	0400	-01 79	34 53	27 82	0 159	6 18	4736 4
OBS	0400	-01 79	34 53	27 82		6 18	4736 4

SURFACE OBSERVATIONS

NODC REF NO	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0012	12	21	1960	13	77° 31′ S	160° 34′ W	0448	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
13	15		90	54 5	55 0	89	03	4	6	18	3			8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O₂ml/l ↓	V_f ↓
STD	0000		34 33			7 39	
OBS	0000		34 33			7 39	
STD	0010	-01 08	34 33	27 63		7 41	4723 5
OBS	0010	-01 08	34 33	27 63		7 41	4723 5
STD	0020	-01 05	34 33	27 63		7 40	4724 6
OBS	0020	-01 05	34 33	27 63			4724 6
STD	0030	-01 14	34 33	27 64		7 35	4723 7
OBS	0030	-01 14	34 33	27 64		7 35	4723 7
STD	0050	-01 52	34 34	27 66		7 16	4719 0
OBS	0050	-01 52	34 34	27 66		7 16	4719 0
STD	0075	-01 71	34 39	27 70		6 72	4717 7
OBS	0075	-01 71	34 39	27 70		6 72	4717 7
STD	0100	-01 74	34 39	27 70		6 64	4718 7
OBS	0100	-01 74	34 39	27 70		6 64	4718 7
STD	0150	-01 81	34 40	27 71		6 53	4720 6
OBS	0150	-01 81	34 40	27 71		6 53	4720 6
STD	0200	-01 83	34 40	27 71		6 54	4723 3
OBS	0200	-01 83	34 40	27 71		6 54	4723 3
STD	0250	-01 82	34 42	27 73		6 55	4726 5
OBS	0250	-01 82	34 42	27 73		6 55	4726 5
STD	0300	-01 83	34 43	27 74		6 54	4729 3
OBS	0300	-01 83	34 43	27 74		6 54	4729 3
STD	0400	-01 84	34 51	27 80		6 26	4735 5
OBS	0400	-01 84	34 51	27 80		6 26	4735 5

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0013	12	22	1960	01	77° 52′ S	160° 38′ W	0717	07

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
11	15		91	57 2	57 8	76	03	6	7	16	4			8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma\Delta D$ ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 32	34 27	27 59	0 000	7 27	4718 9
OBS	0000	-01 32	34 27	27 59		7 27	4718 9
STD	0010	-01 30	34 26	27 58	0 005	7 25	4719 7
OBS	0010	-01 30	34 26	27 58		7 25	4719 7
OBS	0019	-01 27	34 48*	27 76*		7 34	4721 7*
STD	0020	-01 28	34 26	27 58	0 010	7 33	4720 7
OBS	0028	-01 34	34 26	27 59		7 27	4720 2
STD	0030	-01 34	34 26	27 59	0 015	7 26	4720 3
OBS	0046	-01 38	34 26	27 59		7 16	4720 6
STD	0050	-01 40	34 26	27 59	0 026	7 13	4720 6
OBS	0069	-01 48	34 26	27 59		6 99	4720 4
STD	0075	-01 50	34 26	27 59	0 038	6 95	4720 5
OBS	0092	-01 57	34 27	27 60		6 87	4720 4
STD	0100	-01 61	34 28	27 61	0 050	6 86	4720 3
OBS	0138	-01 74	34 30	27 63		6 82	4720 6
STD	0150	-01 76	34 31	27 64	0 074	6 74	4721 0
OBS	0184	-01 81	34 32	27 65		6 55	4722 3
STD	0200	-01 85	34 34	27 66	0 096	6 47	4722 7
OBS	0229	-01 89	34 37	27 69		6 36	4723 9
STD	0250	-01 89	34 39	27 71	0 116	6 33	4725 2
OBS	0275	-01 88	34 42	27 73			4727 0
STD	0300	-01 85	34 45	27 75	0 134	6 29	4729 1
OBS	0367	-01 81	34 50	27 79		6 27	4734 0
STD	0400	-01 81	34 51	27 80	0 165	6 28	4736 0
OBS	0417	-01 81	34 51	27 80		6 29	4737 0
OBS	0463	-01 82	34 52	27 81		6 25	4739 6
STD	0500	-01 84	34 53	27 82	0 192	6 29	4741 5
OBS	0510	-01 85	34 53	27 82		6 30	4742 0
OBS	0557	-01 85	34 52	27 81		6 33	4744 7
STD	0600	-01 83	34 53	27 82	0 218		4747 6
OBS	0604	-01 83	34 53	27 82			4747 9
OBS	0652	-01 83	34 54	27 83			4750 8

SURFACE OBSERVATIONS									
NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0014	12	21	1960	19	77° 32′ S	158° 34′ W	0247	02

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
10	09		88	53 9	54 9	80	01	6	5	18	3			8		

SUBSURFACE OBSERVATIONS																	
	SAMPLE DEPTH (M)	T °C ↓		S‰ ↓		σ_t ↓		$\Sigma \Delta D$ ↓		O_2 ml/l ↓		V_f ↓	
STD	0000	-01	13	34	23	27	55	0	000	7	97	4721	7
OBS	0000	-01	13	34	23	27	55			7	97	4721	7
STD	0010	-01	13	34	22	27	55	0	005	8	09	4722	2
OBS	0010	-01	13	34	22	27	55			8	09	4722	2
STD	0020	-01	13	34	22	27	55	0	011	8	03	4722	8
OBS	0020	-01	13	34	22	27	55			8	03	4722	8
STD	0030	-01	25	34	23	27	56	0	016	7	75	4721	6
OBS	0030	-01	25	34	23	27	56			7	75	4721	6
STD	0050	-01	45	34	24	27	57	0	027	7	31	4719	7
OBS	0050	-01	45	34	24	27	57			7	31	4719	7
STD	0075	-01	56	34	24	27	58	0	040	6	95	4719	4
OBS	0075	-01	56	34	24	27	58			6	95	4719	4
STD	0100	-01	62	34	26	27	59	0	053	6	82	4720	1
OBS	0100	-01	62	34	26	27	59			6	82	4720	1
STD	0150	-01	67	34	27	27	60	0	077	6	78	4722	3
OBS	0150	-01	67	34	27	27	60			6	78	4722	3
STD	0200	-01	78	34	30	27	63	0	101	6	59	4723	6
OBS	0200	-01	78	34	30	27	63			6	59	4723	6
OBS	0240	-01	86	34	33	27	66			6	60	4724	9

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0015	12	24	1960	20	77° 06′ S	158° 17′ W	0201	02

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
16	07		77	00 0	50 6	91	43		9	10				6		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O₂ m l/l ↓	V_f ↓
STD	0000	-01 31	34 11	27 46	0 000	8 23	4718 3
OBS	0000	-01 31	34 11	27 46		8 23	4718 3
STD	0010	-01 31	34 11	27 46	0 006	8 06	4718 9
OBS	0010	-01 31	34 11	27 46		8 06	4718 9
STD	0020	-01 29	34 11	27 46	0 013	8 06	4719 9
OBS	0020	-01 29	34 11	27 46		8 06	4719 9
STD	0030	-01 35	34 11	27 46	0 019	8 26	4719 5
OBS	0030	-01 35	34 11	27 46		8 26	4719 5
STD	0050	-01 33	34 12	27 47	0 031	8 02	4721 0
OBS	0050	-01 33	34 12	27 47		8 02	4721 0
STD	0075	-01 57	34 22	27 56	0 046	6 96	4719 2
OBS	0075	-01 57	34 22	27 56		6 96	4719 2
STD	0100	-01 58	34 25	27 58	0 059	6 57	4720 6
OBS	0100	-01 58	34 25	27 58		6 57	4720 6
OBS	0125	-01 64	34 27	27 60		6 31	4721 3
STD	0150	-01 66	34 28	27 61	0 083	5 80	4722 5
OBS	0150	-01 66	34 28	27 61		5 80	4722 5
OBS	0175	-01 68	34 27	27 60			4723 6

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0016	12	25	1960	03	76° 33′ S	157° 58′ W	0320	03

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
10	07		71	51 1	51 6	89	43		9	10	3			5		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O₂ m l/l ↓	V_f ↓
STD	0000	-01 21	34 09	27 44	0 000	7 83	4719 8
OBS	0000	-01 21	34 09	27 44		7 83	4719 8
STD	0010	-01 22	34 08	27 44	0 006	7 90	4720 2
OBS	0010	-01 22	34 08	27 44		7 90	4720 2
STD	0020	-01 22	34 10	27 45	0 013	7 81	4720 9
OBS	0020	-01 22	34 10	27 45		7 81	4720 9
STD	0030	-01 30	34 13	27 48	0 019	7 79	4720 4
OBS	0030	-01 30	34 13	27 48		7 79	4720 4
STD	0050	-01 81	34 31	27 64	0 030	6 73	4714 3
OBS	0050	-01 81	34 31	27 64		6 73	4714 3
STD	0075	-01 81	34 33	27 66	0 041	6 51	4715 9
OBS	0075	-01 81	34 33	27 66		6 51	4715 9
STD	0100	-01 78	34 33	27 65	0 052	6 56	4717 8
OBS	0100	-01 78	34 33	27 65		6 56	4717 8
STD	0150	-01 80	34 35	27 67	0 074	6 55	4720 6
OBS	0150	-01 80	34 35	27 67		6 55	4720 6
STD	0200	-01 78	34 35	27 67	0 095	6 53	4723 9
OBS	0200	-01 78	34 35	27 67		6 53	4723 9
STD	0250	-01 77	34 36	27 68	0 115	6 45	4727 0
OBS	0275	-01 77	34 36	27 68		6 38	4728 5

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0017	12	25	1960	08	76° 08′ S	158° 08′ W	3475	29

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ▼	WET ▼			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
10	05		69	50 2	50 3	96	44	0	8					6		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ▼	S‰ ▼	σ_t ▼	$\Sigma \Delta D$ ▼	O_2 ml/l ▼	V_f ▼
STD	0000	-01 23	34 12	27 47	0 000	7 86	4719 6
OBS	0000	-01 23	34 12	27 47		7 86	4719 6
STD	0010	-01 22	34 12	27 47	0 006	7 94	4720 4
OBS	0010	-01 22	34 12	27 47		7 94	4720 4
STD	0020	-01 21	34 13	27 48	0 012	7 91	4721 2
OBS	0020	-01 21	34 13	27 48		7 91	4721 2
STD	0030	-01 27	34 15	27 49	0 018	7 87	4720 9
OBS	0030	-01 27	34 15	27 49		7 87	4720 9
STD	0050	-01 85	34 30	27 63	0 029	6 75	4713 6
OBS	0050	-01 85	34 30	27 63		6 75	4713 6
STD	0075	-01 83	34 32	27 65	0 040	6 59	4715 5
OBS	0075	-01 83	34 32	27 65		6 59	4715 5
STD	0100	-01 76	34 32	27 65	0 052	6 47	4718 1
OBS	0100	-01 76	34 32	27 65		6 47	4718 1
STD	0150	-01 82	34 33	27 66	0 074	6 61	4720 2
OBS	0150	-01 82	34 33	27 66		6 61	4720 2
STD	0200	-01 79	34 33	27 65	0 096	6 55	4723 6
OBS	0200	-01 79	34 33	27 65		6 55	4723 6
STD	0250	-01 81	34 35	27 67	0 117	6 55	4726 3
OBS	0250	-01 81	34 35	27 67		6 55	4726 3
STD	0300	-01 73	34 35	27 67	0 138	6 53	4730 6
OBS	0300	-01 73	34 35	27 67		6 53	4730 6
STD	0400	-00 67	34 43	27 70	0 178	5 71	4753 5
OBS	0400	-00 67	34 43	27 70		5 71	4753 5
OBS	0490	01 17	34 65	27 77		4 42	4787 7
STD	0500	01 21	34 66	27 78	0 215	4 39	4788 9
OBS	0588	01 48	34 72	27 81		4 21	4798 4
STD	0600	01 47	34 72	27 81	0 248	4 22	4798 9
OBS	0784	01 27	34 75	27 85		4 29	4807 1
STD	0800	01 25	34 75	27 85	0 309	4 28	4807 7
OBS	0980	01 09	34 72	27 84		4 27	4815 9
STD	1000	01 07	34 72	27 84	0 367	4 30	4816 8
OBS	1176	00 92	34 72	27 85		4 48	4825 1
STD	1200	00 91	34 72	27 85	0 425	4 48	4826 3
OBS	1470	00 81	34 70	27 84		4 50	4840 8
STD	1500	00 80	34 70	27 84	0 513	4 50	4842 4
OBS	1962	00 63	34 70	27 85		4 52	4867 3
STD	2000	00 62	34 70	27 85	0 658	4 55	4869 4
OBS	2454	00 51	34 70	27 86		4 76	4894 7
STD	2500	00 50	34 70	27 86	0 798	4 76	4897 2
OBS	2949	00 47	34 70	27 86		4 74	4923 3

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0018	12	25	1960	16	75° 38′ S	158° 43′ W	3484	28

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ▼	WET ▼			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
11	02		71	50 6	51 0	91	02	0	4					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ▼	S‰ ▼	σ_t ▼	ΣΔD ▼	O_2 ml/l ▼	V_f ▼
STD	0000	−01 80	34 16	27 52	0 000	7 20	4710 8
OBS	0000	−01 80	34 16	27 52		7 20	4710 8
STD	0010	−01 80	34 13	27 49	0 006	7 22	4711 3
OBS	0010	−01 80	34 13	27 49		7 22	4711 3
STD	0020	−01 79	34 14	27 50	0 012	7 22	4712 1
OBS	0020	−01 79	34 14	27 50		7 22	4712 1
STD	0030	−01 84	34 16	27 52	0 018	7 22	4712 0
OBS	0030	−01 84	34 16	27 52		7 22	4712 0
STD	0050	−01 89	34 28	27 62	0 028	6 63	4712 9
OBS	0050	−01 89	34 28	27 62		6 63	4712 9
STD	0075	−01 85	34 29	27 62	0 040	6 64	4715 0
OBS	0075	−01 85	34 29	27 62		6 64	4715 0
STD	0100	−01 78	34 29	27 62	0 052	6 52	4717 6
OBS	0100	−01 78	34 29	27 62		6 52	4717 6
STD	0150	−01 67	34 33	27 65	0 075	6 52	4722 5
OBS	0150	−01 67	34 33	27 65		6 52	4722 5
STD	0200	−01 42	34 34	27 65	0 097	6 30	4729 5
OBS	0200	−01 42	34 34	27 65		6 30	4729 5
STD	0250	−01 06	34 38	27 67	0 118	6 03	4738 3
OBS	0250	−01 06	34 38	27 67		6 03	4738 3
STD	0300	−00 75	34 42	27 69	0 139	5 77	4746 3
OBS	0300	−00 75	34 42	27 69		5 77	4746 3
STD	0400	01 03	34 63	27 77	0 176	4 50	4780 2
OBS	0400	01 03	34 63	27 77		4 50	4780 2
OBS	0456	01 32	34 69	27 80		4 37	4788 0
STD	0500	01 39	34 70	27 80	0 210	4 32	4791 7
OBS	0549	01 44	34 71	27 80		4 28	4795 4
STD	0600	01 40	34 71	27 81	0 242	4 25	4797 9
OBS	0733	01 29	34 71	27 81		4 24	4804 2
STD	0800	01 23	34 71	27 82	0 306	4 27	4807 3
OBS	0917	01 13	34 71	27 83		4 34	4812 7
STD	1000	01 04	34 71	27 83	0 367	4 42	4816 3
OBS	1103	00 96	34 71	27 84		4 49	4821 3
STD	1200	00 92	34 71	27 84	0 427	4 53	4826 4
OBS	1380	00 85	34 71	27 84		4 58	4836 1
STD	1500	00 80	34 71	27 85	0 515	4 59	4842 5
OBS	1850	00 67	34 70	27 85		4 62	4861 3
STD	2000	00 62	34 70	27 85	0 658	4 67	4869 4
OBS	2326	00 53	34 70	27 86		4 74	4887 4
STD	2500	00 50	34 70	27 86	0 798	4 77	4897 2
OBS	2816	00 48	34 70	27 86		4 79	4915 6

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0019	12	26	1960	01	75° 41′ S	156° 47′ W	3621	30

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	07		68	50 3	50 7	92	73	0	8					4		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ ΔD ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 66	34 13	27 49	0 000	7 57	4712 9
OBS	0000	-01 66	34 13	27 49		7 57	4712 9
STD	0010	-01 67	34 13	27 49	0 006	7 56	4713 3
OBS	0010	-01 67	34 13	27 49		7 56	4713 3
STD	0020	-01 67	34 12	27 48	0 012	7 56	4713 9
OBS	0020	-01 67	34 12	27 48		7 56	4713 9
STD	0030	-01 74	34 14	27 50	0 018	7 57	4713 5
OBS	0030	-01 74	34 14	27 50		7 57	4713 5
STD	0050	-01 78	34 23	27 57	0 029	7 13	4714 4
OBS	0050	-01 78	34 23	27 57		7 13	4714 4
STD	0075	-01 83	34 28	27 62	0 042	6 73	4715 3
OBS	0075	-01 83	34 28	27 62		6 73	4715 3
STD	0100	-01 81	34 28	27 61	0 054	6 72	4717 1
OBS	0100	-01 81	34 31*	27 64*		6 72	4717 3*
STD	0150	-01 79	34 29	27 62	0 077	6 63	4720 5
OBS	0150	-01 79	34 29	27 62		6 63	4720 5
STD	0200	-01 33	34 33	27 64	0 100	6 27	4730 9
OBS	0200	-01 33	34 33	27 64		6 27	4730 9
STD	0250	-00 71	34 40	27 68	0 122	5 82	4743 8
OBS	0250	-00 71	34 40	27 68		5 82	4743 8
STD	0300	-00 46	34 44	27 70	0 142	5 62	4750 8
OBS	0300	-00 46	34 44	27 70		5 62	4750 8
STD	0400	01 15	34 64	27 77	0 180	4 48	4782 0
OBS	0400	01 15	34 64	27 77		4 48	4782 0
OBS	0499	01 45	34 71	27 80		4 28	4792 6
STD	0500	01 45	34 71	27 80	0 214	4 28	4792 7
OBS	0599	-00 72*	34 28*	27 58*			4763 9*
STD	0600	01 39	34 71	27 81	0 246	4 33	4797 7
OBS	0799	01 26	34 71	27 82		4 40	4807 6
STD	0800	01 26	34 71	27 82	0 310	4 40	4807 7
OBS	0998	01 09	34 71	27 83		4 41	4817 0
STD	1000	01 09	34 71	27 83	0 372	4 41	4817 1
OBS	1198	00 94	34 71	27 84		4 58	4826 6
STD	1200	00 94	34 71	27 84	0 432	4 58	4826 7
OBS	1498	00 82	34 72	27 85		4 61	4842 7
STD	1500	00 82	34 72	27 85	0 519	4 61	4842 8
OBS	1977	00 64	34 70	27 85		4 62	4868 4
STD	2000	00 63	34 70	27 85	0 662	4 63	4869 6
OBS	2496	00 50	34 71*	27 86*		4 74	4897 0*
STD	2500	00 50	34 70	27 86	0 802	4 74	4897 2
OBS	2996	00 44	34 70	27 86		4 77	4925 7

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0020	12	26	1960	09	76° 01′S	156° 44′W	3475	29

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	02		69	50 3	50 7	92	71	0	8					7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 48	34 03	27 40	0 000	8 06	4715 3
OBS	0000	-01 48	34 03	27 40		8 06	4715 3
STD	0010	-01 48	34 04	27 41	0 007	8 15	4716 0
OBS	0010	-01 48				8 15	
STD	0020	-01 45	34 04	27 41	0 014	8 03	4717 0
OBS	0020	-01 45	34 04	27 41		8 03	4717 0
STD	0030	-01 59	34 08	27 45	0 020	7 48	4715 6
OBS	0030	-01 59	34 08	27 45			4715 6
STD	0050	-01 88	34 28	27 62	0 031	6 76	4713 0
OBS	0050	-01 88	34 28	27 62		6 76	4713 0
STD	0075	-01 82	34 29	27 62	0 043	6 58	4715 5
OBS	0075	-01 82	34 29	27 62		6 58	4715 5
STD	0100	-01 79	34 30	27 63	0 055	6 63	4717 5
OBS	0100	-01 79	34 30	27 63		6 63	4717 5
STD	0150	-01 77	34 31	27 64	0 078	6 57	4720 9
OBS	0150	-01 77	34 31	27 64		6 57	4720 9
STD	0200	-01 72	34 33	27 65	0 100	6 50	4724 7
OBS	0200	-01 72	34 33	27 65		6 50	4724 7
STD	0250	-01 66	34 33	27 65	0 122	6 07	4728 6
OBS	0250	-01 66	34 33	27 65		6 07	4728 6
STD	0300	-01 13	34 39	27 68	0 143	6 11	4740 2
OBS	0300	-01 13	34 39	27 68		6 11	4740 2
STD	0400	00 41	34 55	27 74	0 182	5 00	4770 5
OBS	0400	00 41	34 55	27 74		5 00	4770 5
OBS	0479	01 29	34 68	27 79		4 43	4788 9
STD	0500	01 35	34 69	27 79	0 216	4 37	4791 1
OBS	0576	01 48	34 73	27 82		4 22	4797 7
STD	0600	01 46	34 73	27 82	0 249	4 24	4798 8
OBS	0768	01 29	34 72	27 82		4 35	4806 3
STD	0800	01 26	34 72	27 82	0 311	4 35	4807 8
OBS	0960	01 10	34 72	27 84		4 37	4814 9
STD	1000	01 06	34 72	27 84	0 371	4 40	4816 7
OBS	1154	00 94	34 71	27 84		4 49	4824 0
STD	1200	00 92	34 71	27 84	0 430	4 50	4826 4
OBS	1444	00 82	34 70	27 84		4 56	4839 4
STD	1500	00 79	34 70	27 84	0 519	4 56	4842 3
OBS	1931	00 62	34 70	27 85		4 59	4865 3
STD	2000	00 60	34 70	27 85	0 663	4 61	4869 1
OBS	2422	00 51	34 70	27 86		4 72	4892 8
STD	2500	00 50	34 70	27 86	0 803	4 73	4897 2
OBS	2918	00 47	34 69	27 85		4 75	4921 5

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0021	12	26	1960	17	76° 34′ S	155° 49′ W	0457	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
14	36		74	00 3	50 3	90	02	6	8					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 21	34 03	27 39	0 000	8 52	4719 6
OBS	0000	-01 21	34 03	27 39		8 52	4719 6
STD	0010	-01 25	34 03	27 40	0 007	8 56	4719 5
OBS	0010	-01 25	34 03	27 40		8 56	4719 5
STD	0020	-01 23	34 03	27 40	0 014	8 58	4720 4
OBS	0020	-01 23	34 03	27 40		8 58	4720 4
OBS	0029	-01 34	34 15	27 50		8 21	4719 8
STD	0030	-01 36	34 16	27 50	0 020	8 13	4719 6
OBS	0048	-01 58	34 25	27 58		6 94	4717 6
STD	0050	-01 58	34 25	27 58	0 031	6 91	4717 7
OBS	0073	-01 56	34 29	27 62			4719 5
STD	0075	-01 55	34 29	27 62	0 044	6 61	4719 8
OBS	0097	-01 52	34 29	27 62		6 46	4721 6
STD	0100	-01 53	34 29	27 62	0 055	6 47	4721 6
OBS	0146	-01 65	34 32	27 64		6 55	4722 6
STD	0150	-01 67	34 32	27 64	0 079	6 55	4722 5
OBS	0195	-01 79	34 33	27 65		6 57	4723 3
STD	0200	-01 79	34 33	27 65	0 101	6 58	4723 6
OBS	0243	-01 80	34 35	27 67		6 63	4726 1
STD	0250	-01 80	34 35	27 67	0 122	6 63	4726 5
OBS	0292	-01 80	34 35	27 67		6 63	4729 0
STD	0300	-01 80	34 35	27 67	0 143	6 63	4729 5
OBS	0390	-01 77	34 35	27 67		6 58	4735 3

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	* MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0022	12	27	1960	02	77° 01′S	155° 50′W	0705	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
13	02		76	50 3	50 8	91	71	0	8					5		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 12	34 01	27 38	0 000	8 78	4720 9
OBS	0000	-01 12	34 01	27 38		8 78	4720 9
STD	0010	-01 11	34 02	27 38	0 007	8 79	4721 7
OBS	0010	-01 11	34 02	27 38		8 79	4721 7
OBS	0019	-01 09	34 02	27 38		8 77	4722 5
STD	0020	-01 09	34 02	27 38	0 014	8 74	4722 6
OBS	0028	-01 10	34 06	27 42		8 55	4723 1
STD	0030	-01 10	34 07	27 42	0 021	8 51	4723 2
OBS	0047	-01 12	34 14	27 48		8 15	4724 3
STD	0050	-01 12	34 14	27 48	0 034	8 12	4724 4
OBS	0071	-01 17	34 18	27 52		7 66	4725 1
STD	0075	-01 21	34 19	27 52	0 048	7 44	4724 7
OBS	0094	-01 36	34 22	27 55		6 63	4723 6
STD	0100	-01 37	34 22	27 55	0 062	6 59	4723 8
OBS	0141	-01 42	34 24	27 57		6 41	4725 6
STD	0150	-01 43	34 25	27 58	0 088	6 41	4726 0
OBS	0188	-01 48	34 27	27 60		6 40	4727 5
STD	0200	-01 52	34 27	27 60	0 113	6 40	4727 6
OBS	0236	-01 59	34 29	27 62		6 39	4728 7
STD	0250	-01 60	34 30	27 63	0 137	6 41	4729 5
OBS	0283	-01 62	34 31	27 63		6 45	4731 1
STD	0300	-01 64	34 32	27 64	0 159	6 47	4731 9
OBS	0379	-01 78	34 33	27 65		6 57	4734 4

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0023	12	27	1960	07	77° 00′S	153° 47′W	0329	02

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
14	05		76	51 7	51 8	92	73	0	5					3		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 32	34 14	27 49	0 000	7 50	4718 3
OBS	0000	-01 32	34 14	27 49		7 50	4718 3
STD	0010	-01 31	34 14	27 49	0 006	7 50	4719 1
OBS	0010	-01 31	34 14	27 49		7 50	4719 1
STD	0020	-01 29	34 14	27 49	0 012	7 46	4720 0
OBS	0020	-01 29	34 14	27 49		7 46	4720 0
STD	0030	-01 31	34 14	27 49	0 018	7 39	4720 3
OBS	0030	-01 31	34 14	27 49		7 39	4720 3
STD	0050	-01 36	34 17	27 51	0 030	7 14	4720 8
OBS	0050	-01 36	34 17	27 51		7 14	4720 8
STD	0075	-01 35	34 19	27 53	0 044	6 83	4722 5
OBS	0075	-01 35	34 19	27 53		6 83	4722 5
STD	0100	-01 33	34 19	27 53	0 058	6 73	4724 3
OBS	0100	-01 33	34 19	27 53		6 73	4724 3
STD	0150	-01 34	34 23	27 56	0 085	6 26	4727 3
OBS	0150	-01 34	34 23	27 56		6 26	4727 3
STD	0200	-01 34	34 27	27 59	0 111	6 23	4730 5
OBS	0200	-01 34	34 27	27 59		6 23	4730 5

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0024	12	27	1960	22	76° 30′ S	153° 53′ W	0549	05

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
11	09		73	50 3	50 8	91	71	6	2					5		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 43	34 00	27 38	0 000	8 61	4716 0
OBS	0000	-01 43	34 00	27 38		8 61	4716 0
STD	0010	-01 46	33 99	27 37	0 007	8 63	4716 1
OBS	0010	-01 46	33 99	27 37		8 63	4716 1
STD	0020	-01 49	33 99	27 37	0 014	8 58	4716 2
OBS	0020	-01 49	33 99	27 37		8 58	4716 2
STD	0030	-01 56	34 01	27 39	0 021	8 47	4715 8
OBS	0030	-01 56	34 01	27 39		8 47	4715 8
STD	0050	-01 48	34 08	27 44	0 035	8 09	4718 5
OBS	0050	-01 48	34 08	27 44		8 09	4718 5
STD	0075	-01 56	34 18	27 53	0 050	7 34	4719 2
OBS	0075	-01 56	34 26*	27 59*		7 34	4719 5*
STD	0100	-01 65	34 24	27 58	0 063	6 79	4719 5
OBS	0100	-01 65	34 24	27 58		6 79	4719 5
STD	0150	-01 63	34 25	27 59	0 089	6 55	4722 8
OBS	0150	-01 63	34 25	27 59		6 55	4722 8
STD	0200	-01 74	34 34	27 66	0 112	6 60	4724 4
OBS	0200	-01 74	34 34	27 66		6 60	4724 4
STD	0250	-01 72	34 33	27 65	0 133	6 56	4727 7
OBS	0250	-01 68*	34 33	27 65*		6 56	4728 3*
STD	0300	-01 71	34 32	27 64	0 155	6 57	4730 8
OBS	0300	-01 71	34 32	27 64		6 57	4730 8
STD	0400	-01 72	34 34	27 66	0 198	6 58	4736 6
OBS	0400	-01 72	34 34	27 66		6 58	4736 6
STD	0500	00 01	34 56	27 77	0 236	5 28	4770 5
OBS	0500	00 01	34 56	27 77		5 28	4770 5

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0025	12	28	1960	10	76° 00′ S	153° 54′ W	3246	30

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	32		77	50 8	51 4	89	02	4	6					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ O ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 59	34 09	27 45	0 000	8 32	4713 8
OBS	0000	-01 59	34 09	27 45		8 32	4713 8
STD	0010	-01 59	34 12	27 48	0 006	8 30	4714 6
OBS	0010	-01 59	34 12	27 48		8 30	4714 6
STD	0020	-01 68	34 09	27 46	0 012	8 09	4713 6
OBS	0020	-01 68	34 09	27 46		8 09	4713 6
STD	0030	-01 67	34 10	27 47	0 019	8 19	4714 4
OBS	0030	-01 67	34 10	27 47		8 19	4714 4
STD	0050	-01 83	34 09	27 46	0 031	7 20	4713 0
OBS	0050	-01 83	34 09	27 46		7 20	4713 0
STD	0075	-01 78	34 28	27 61	0 045	7 01	4716 1
OBS	0075	-01 78	34 28	27 61		7 01	4716 1
STD	0100	-01 75	34 30	27 63	0 057	7 01	4718 2
OBS	0100	-01 75	34 30	27 63		7 01	4718 2
STD	0150	-01 66	34 31	27 64	0 080	6 90	4722 6
OBS	0150	-01 66	34 31	27 64		6 90	4722 6
STD	0200	-01 66	34 31	27 64	0 103	6 84	4725 6
OBS	0200	-01 66	34 31	27 64		6 84	4725 6
STD	0250	-01 71	34 32	27 64	0 125	6 93	4727 8
OBS	0250	-01 71	34 32	27 64		6 93	4727 8
STD	0300	-01 55	34 34	27 66	0 147	6 75	4733 4
OBS	0300	-01 55	34 34	27 66		6 75	4733 4
STD	0400	00 44	34 55	27 74	0 187	5 18	4771 0
OBS	0400	00 44	34 55	27 74		5 18	4771 0
OBS	0494	01 35	34 68	27 79		4 24	4790 7
STD	0500	01 36	34 68	27 79	0 222	4 24	4791 2
OBS	0593	01 49	34 71	27 80		4 20	4798 8
STD	0600	01 48	34 71	27 80	0 255	4 21	4799 1
OBS	0791	01 31	34 73	27 83		4 32	4808 0
STD	0800	01 30	34 73	27 83	0 319	4 32	4808 4
OBS	0989	01 12	34 72	27 83		4 32	4816 9
STD	1000	01 11	34 72	27 83	0 379	4 33	4817 4
OBS	1187	00 95	34 72	27 85		4 44	4826 2
STD	1200	00 94	34 72	27 85	0 438	4 44	4826 8
OBS	1484	00 82	34 71	27 85		4 53	4841 8
STD	1500	00 81	34 71	27 85	0 525	4 53	4842 6
OBS	1980	00 64	34 70	27 85		4 60	4868 5
STD	2000	00 64	34 70	27 85	0 669	4 60	4869 7
OBS	2476	00 51	34 71	27 86		4 66	4896 0
STD	2500	00 50	34 71	27 86	0 808	4 66	4897 3
OBS	2974	00 09	34 70	27 88		4 67	4919 1

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0026	12	30	1960	00	75° 20′ S	154° 12′ W	3695	30

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	36		90	51 1	51 7	88	01	6	3					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 63	34 13	27 49	0 000	7 15	4713 4
OBS	0000	-01 63	34 13	27 49		7 15	4713 4
STD	0010	-01 67	34 13	27 49	0 006	7 16	4713 3
OBS	0010	-01 67	34 13	27 49		7 16	4713 3
STD	0020	-01 69	34 13	27 49	0 012	7 15	4713 6
OBS	0020	-01 69	34 13	27 49		7 15	4713 6
STD	0030	-01 74	34 14	27 50	0 018	7 14	4713 5
OBS	0030	-01 74	34 14	27 50		7 14	4713 5
STD	0050	-01 80	34 19	27 54	0 029	6 89	4713 9
OBS	0050	-01 80	34 19	27 54		6 89	4713 9
STD	0075	-01 76	34 28	27 61	0 042	6 64	4716 4
OBS	0075	-01 76	34 28	27 61		6 64	4716 4
STD	0100	-01 78	34 28	27 61	0 054	6 63	4717 6
OBS	0100	-01 78	34 28	27 61		6 63	4717 6
STD	0150	-01 71	34 31	27 64	0 078	6 52	4721 8
OBS	0150	-01 71	34 31	27 64		6 52	4721 8
STD	0200	-01 42	34 33	27 64	0 100	6 28	4729 5
OBS	0200	-01 42	34 33	27 64		6 28	4729 5
STD	0250	-00 99	34 39	27 68	0 122	5 95	4739 4
OBS	0250	-00 99	34 39	27 68		5 95	4739 4
STD	0300	-00 37	34 46	27 71	0 142	5 50	4752 3
OBS	0300	-00 37	34 46	27 71		5 50	4752 3
STD	0400	01 30	34 68	27 79	0 178	4 31	4784 4
OBS	0400	01 30	34 68	27 79		4 31	4784 4
STD	0500	01 46	34 73	27 82	0 210	4 27	4792 9
OBS	0500	01 46	34 73	27 82		4 27	4792 9
STD	0600	01 45	34 73	27 82	0 241	4 27	4798 7
OBS	0600	01 45	34 73	27 82		4 27	4798 7
STD	0800	01 23	34 73	27 83	0 302	4 38	4807 4
OBS	0800	01 23	34 73	27 83		4 38	4807 4
STD	1000	01 09	34 73	27 84	0 361	4 39	4817 2
OBS	1000	01 09	34 73	27 84		4 39	4817 2
STD	1200	00 94	34 72	27 85	0 419	4 49	4826 8
OBS	1200	00 94	34 72	27 85		4 49	4826 8
STD	1500	00 81	34 72	27 85	0 505	4 60	4842 7
OBS	1500	00 81	34 72	27 85		4 60	4842 7
STD	2000	00 64	34 72	27 86	0 643	4 73	4869 8
OBS	2000	00 64	34 72	27 86		4 73	4869 8
STD	2500	00 51	34 71	27 86	0 779		4897 4
OBS	2500	00 51	34 71	27 86			4897 4
OBS	3000	01 27*	34 73*	27 83*			4938 3*

SURFACE OBSERVATIONS

NODC REF. NO	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0027	12	28	1960	22	75° 31′S	152° 08′W	3402	30

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
08	36		86	50 6	51 1	89	02	6	8					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 51	34 00	27 38	0 000	8 38	4714 7
ORS	0000	-01 51	34 00	27 38		8 38	4714 7
STD	0010	-01 55	34 00	27 38	0 007	8 34	4714 7
ORS	0010	-01 55	34 00	27 38		8 34	4714 7
STD	0020	-01 55	34 00	27 38	0 014	8 33	4715 3
ORS	0020	-01 55	34 00	27 38		8 33	4715 3
STD	0030	-01 65	34 01	27 39	0 021	8 04	4714 3
ORS	0030	-01 65	34 01	27 39		8 04	4714 3
STD	0050	-01 69	34 10	27 47	0 034	7 71	4715 3
ORS	0050	-01 69	34 10	27 47		7 71	4715 3
STD	0075	-01 79	34 27	27 61	0 048	6 66	4715 9
ORS	0075	-01 79	34 27	27 61		6 66	4715 9
STD	0100	-01 77	34 28	27 61	0 060	6 58	4717 8
ORS	0100	-01 77	34 28	27 61		6 58	4717 8
STD	0150	-01 72	34 30	27 63	0 084	6 51	4721 6
ORS	0150	-01 72	34 30	27 63		6 51	4721 6
STD	0200	-01 68	34 32	27 64	0 106	6 43	4725 3
ORS	0200	-01 68	34 32	27 64		6 43	4725 3
STD	0250	-01 53	34 32	27 64	0 129	6 31	4730 6
ORS	0250	-01 53	34 32	27 64		6 31	4730 6
STD	0300	-01 10	34 37	27 67	0 151	5 99	4740 6
ORS	0300	-01 10	34 37	27 67		5 99	4740 6
STD	0400	00 58	34 56	27 74	0 190	4 85	4773 1
ORS	0400	00 58	34 56	27 74		4 85	4773 1
ORS	0488	01 32	34 69	27 80		4 35	4789 9
STD	0500	01 35	34 69	27 79	0 225	4 33	4791 1
ORS	0586	01 46	34 72	27 81		4 25	4798 0
STD	0600	01 45	34 72	27 81	0 258	4 25	4798 7
ORS	0782	01 27	34 74	27 84		4 27	4806 9
STD	0800	01 25	34 74	27 84	0 319	4 28	4807 7
ORS	0978	01 09	34 73	27 84		4 33	4815 9
STD	1000	01 07	34 73	27 85	0 377	4 35	4816 9
ORS	1174	00 95	34 72	27 85		4 46	4825 4
STD	1200	00 94	34 72	27 85	0 435	4 47	4826 8
ORS	1469	00 81	34 73*	27 86*		4 54	4840 9*
STD	1500	00 80	34 71	27 85	0 522	4 54	4842 5
ORS	1963	00 62	34 70	27 85		4 60	4867 2
STD	2000	00 61	34 70	27 85	0 665	4 60	4869 3
ORS	2459	00 51	34 70	27 86		4 64	4895 0
STD	2500	00 50	34 70	27 86	0 805	4 64	4897 2
ORS	2957	00 45	34 70	27 86		4 68	4923 5

SURFACE OBSERVATIONS									
NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0028	12	28	1960	18	75° 58′ S	151° 58′ W	0265	02

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
06	27		83	50 8	51 4	89	71	0	8					4		

SUBSURFACE OBSERVATIONS								
	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ ΔD ↓	O₂ml/l ↓	V_f ↓	
STD	0000	-01 44	34 03	27 40	0 000	8 24	4716	0
ORS	0000	-01 44	34 03	27 40		8 24	4716	0
STD	0010	-01 52	34 04	27 41	0 007	8 10	4715	3
ORS	0010	-01 52	34 04	27 41		8 10	4715	3
STD	0020	-01 54	34 05	27 42	0 014	8 13	4715	6
ORS	0020	-01 54	34 05	27 42		8 13	4715	6
STD	0030	-01 63	34 05	27 42	0 020	7 63	4714	8
ORS	0030	-01 63	34 05	27 42		7 63	4714	8
STD	0050	-01 70	34 15	27 51	0 033	7 46	4715	3
ORS	0050	-01 70	34 15	27 51		7 46	4715	3
STD	0075	-01 73	34 30	27 63	0 046	6 72	4717	0
ORS	0075	-01 73	34 30	27 63		6 72	4717	0
STD	0100	-01 72	34 31	27 64	0 057	6 55	4718	7
ORS	0100	-01 72	34 31	27 64		6 55	4718	7
STD	0150	-01 75	34 32	27 65	0 080	6 56	4721	2
ORS	0150	-01 75	34 32	27 65		6 56	4721	2
STD	0200	-01 74	34 33	27 65	0 102	6 56	4724	4
ORS	0200	-01 74	34 33	27 65		6 56	4724	4
ORS	0225	-01 66	34 35	27 67		6 50	4727	2

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0029	12	28	1960	02	76° 30′ S	151° 39′ W	0274	02

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
12	09		72	00 3	50 1	93	02	0	5	09	3			8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 74	34 28	27 61	0 000	6 92	4712 3
ORS	0000	-01 74	34 28	27 61		6 92	4712 3
STD	0010	-01 75	34 26	27 60	0 005	6 94	4712 6
ORS	0010	-01 75	34 26	27 60		6 94	4712 6
STD	0020	-01 75	34 28	27 61	0 010	6 95	4713 3
ORS	0020	-01 75	34 28	27 61		6 95	4713 3
STD	0030	-01 78	34 27	27 61	0 015	6 94	4713 4
ORS	0030	-01 78	34 27	27 61		6 94	4713 4
STD	0050	-01 79	34 27	27 61	0 025	6 95	4714 4
ORS	0050	-01 79	34 27	27 61		6 95	4714 4
STD	0075	-01 74	34 28	27 61	0 037	6 79	4716 8
ORS	0075	-01 74	34 28	27 61		6 79	4716 8
STD	0100	-01 71	34 32	27 64	0 048	6 61	4718 9
ORS	0100	-01 71	34 32	27 64		6 61	4718 9
STD	0150	-01 69	34 32	27 64	0 071	6 61	4722 2
ORS	0150	-01 69	34 32	27 64		6 61	4722 2
STD	0200	-01 70	34 33	27 65	0 093	6 62	4725 0
ORS	0200	-01 70	34 33	27 65		6 62	4725 0
STD	0250	-01 70	34 34	27 66	0 114	6 62	4728 1
ORS	0250	-01 70	34 34	27 66		6 62	4728 1

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0030	12	27	1960	15	77° 00′ S	151° 48′ W	1134	09

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
09	09		77	51 8	52 0	94	71	0	8					4		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 18	34 19	27 52	0 000	7 95	4720 7
OBS	0000	-01 18	34 19	27 52		7 95	4720 7
STD	0010	-01 30	34 20	27 54	0 006	7 77	4719 5
OBS	0010	-01 30	34 20	27 54		7 77	4719 5
OBS	0019	-01 27	34 20	27 53		7 86	4720 5
STD	0020	-01 28	34 20	27 53	0 011	7 86	4720 4
OBS	0029	-01 33	34 21	27 54		7 84	4720 2
STD	0030	-01 33	34 21	27 54	0 017	7 83	4720 2
OBS	0048	-01 37	34 21	27 55		7 63	4720 7
STD	0050	-01 37	34 21	27 55	0 028	7 62	4720 8
OBS	0073	-01 37	34 23	27 56		7 41	4722 3
STD	0075	-01 37	34 23	27 56	0 041	7 38	4722 4
OBS	0097	-01 42	34 23	27 56		7 09	4722 9
STD	0100	-01 43	34 23	27 56	0 054	7 08	4722 9
OBS	0145	-01 52	34 25	27 58			4724 3
STD	0150	-01 53	34 25	27 58	0 080	6 99	4724 4
OBS	0194	-01 61	34 28	27 61		6 88	4725 9
STD	0200	-01 61	34 28	27 61	0 105	6 86	4726 2
OBS	0242	-01 64	34 30	27 63		6 74	4728 3
STD	0250	-01 64	34 30	27 63	0 128	6 73	4728 8
OBS	0291	-01 65	34 30	27 63		6 70	4731 1
STD	0300	-01 65	34 30	27 63	0 151	6 70	4731 6
OBS	0389	-01 71	34 32	27 64		6 70	4736 1
STD	0400	-01 72	34 32	27 64	0 196	6 69	4736 6
OBS	0451	-01 76	34 32	27 65		6 65	4739 0
STD	0500	-01 74	34 33	27 65	0 238	6 61	4742 2
OBS	0542	-01 73	34 33	27 65		6 59	4744 9
STD	0600	-01 71	34 34	27 66	0 279	6 59	4748 7
OBS	0727	-01 68	34 36	27 68		6 59	4756 8
STD	0800	-01 54	34 38	27 69	0 357	6 48	4763 5
OBS	0916	-01 18	34 41	27 70		6 18	4776 2

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0031	12	27	1960	11	77° 16'S	152° 22'W	0210	02

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
16	09		78	51 1	51 8	89	71	0	6	05	3			7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ O ↓	σ_t ↓	Σ ΔD ↓	O₂ ml/l ↓	V_f ↓
STD	0000	-01 32	34 11	27 46	0 000	7 73	4718 2
ORS	0000	-01 32	34 11	27 46		7 73	4718 2
STD	0010	-01 33	34 12	27 47	0 006	7 75	4718 7
ORS	0010	-01 33	34 12	27 47		7 75	4718 7
STD	0020	-01 42	34 12	27 47	0 012	7 21	4717 8
ORS	0020	-01 42	34 12	27 47		7 21	4717 8
STD	0030	-01 38	34 13	27 48	0 019	7 45	4719 1
ORS	0030	-01 38	34 13	27 48		7 45	4719 1
STD	0050	-01 39	34 13	27 48	0 031	7 21	4720 1
ORS	0050	-01 39	34 13	27 48		7 21	4720 1
STD	0075	-01 39	34 18	27 52	0 045	6 02	4721 8
ORS	0075	-01 39	34 18	27 52		6 02	4721 8
STD	0100	-01 37	34 20	27 54	0 059	5 96	4723 7
ORS	0100	-01 37	34 20	27 54		5 96	4723 7
STD	0150	-01 18	34 27	27 59	0 086	5 95	4730 0
ORS	0150	-01 18	34 27	27 59		5 95	4730 0
STD	0200	-01 17	34 29	27 60	0 110	5 98	4733 2
ORS	0200	-01 17	34 29	27 60		5 98	4733 2

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0032	12	29	1960	11	75° 10′S	147° 51′W	3658	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	02		92	52 2	52 8	87	02	0	6					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 54	34 04	27 41	0 000	8 25	4714 4
OBS	0000	-01 54	34 04	27 41		8 25	4714 4
STD	0010	-01 53	34 04	27 41	0 007	8 30	4715 2
OBS	0010	-01 53	34 04	27 41		8 30	4715 2
STD	0020	-01 53	34 05	27 42	0 013	8 25	4715 8
OBS	0020	-01 53	34 05	27 42		8 25	4715 8
STD	0030	-01 55	34 04	27 41	0 020	8 22	4716 0
OBS	0030	-01 55	34 04	27 41		8 22	4716 0
STD	0050	-01 66	34 06	27 43	0 033	7 93	4715 6
OBS	0050	-01 66	34 06	27 43		7 93	4715 6
STD	0075	-01 69	34 27	27 60	0 048	6 70	4717 5
OBS	0075	-01 69	34 27	27 60		6 70	4717 5
STD	0100	-01 68	34 28	27 61	0 060	6 50	4719 2
OBS	0100	-01 68	34 28	27 61		6 50	4719 2
STD	0150	-01 74	34 31	27 64	0 083	6 50	4721 3
OBS	0150	-01 74	34 31	27 64		6 50	4721 3
STD	0200	-01 59	34 34	27 66	0 105	6 33	4726 8
OBS	0200	-01 59	34 34	27 66		6 33	4726 8
STD	0250	-01 40	34 37	27 68	0 127	6 14	4732 9
OBS	0250	-01 40	34 37	27 68		6 14	4732 9
STD	0300	-00 22	34 47	27 71	0 147	5 35	4754 7
OBS	0300	-00 22	34 47	27 71		5 35	4754 7
STD	0400	01 38	34 67	27 78	0 183	4 33	4785 5
OBS	0400	01 38	34 67	27 78		4 33	4785 5

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0033	01	22	1961	22	57° 19′ S	152° 27′ W	3292	26

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ▼	WET ▼			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
09	27		23	06 7	05 3	81	02	8	4	25	4			8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ▼	S‰ O ▼	σ_t ▼	$\Sigma \Delta D$ ▼	O ml/l ▼	V_f ▼
STD	0000	03 67	33 94	27 00	0 000	7 19	4791 5
OBS	0000	03 67	33 94	27 00		7 19	4791 5
STD	0010	03 64	33 94	27 00	0 011	7 31	4791 7
OBS	0010	03 64	33 94	27 00		7 31	4791 7
OBS	0019	03 53	33 94	27 01		7 36	4790 7
STD	0020	03 53	33 94	27 01	0 021	7 36	4790 7
OBS	0028	03 49	33 94	27 02		7 36	4790 7
STD	0030	03 42	33 94	27 02	0 032	7 37	4789 8
OBS	0047	02 69	33 94	27 09		7 48	4780 5
STD	0050	02 52	33 95	27 11	0 052	7 52	4778 2
OBS	0071	01 26	33 99	27 24		7 75	4761 3
STD	0075	00 93	33 99	27 26	0 074	7 77	4756 6
OBS	0094	-00 23	34 00	27 33		7 86	4740 2
STD	0100	-00 25	34 00	27 33	0 094	7 86	4740 3
OBS	0141	-00 41	34 02	27 36		7 87	4740 3
STD	0150	-00 55	34 02	27 36	0 131	7 83	4738 7
OBS	0188	-00 71	34 04	27 38			4738 6
STD	0200	-00 57	34 08	27 41	0 165	7 18	4741 6
OBS	0236	00 12	34 20	27 48		6 30	4754 9
STD	0250	00 67	34 27	27 50	0 197	5 69	4764 3
OBS	0284	01 70	34 40	27 54		4 57	4782 2
STD	0300	01 80	34 41	27 54	0 226	4 42	4784 6
OBS	0381	02 21	34 47	27 55		4 05	4795 6
STD	0400	02 21	34 48	27 56	0 282	4 09	4796 8
OBS	0436	02 06*	34 50	27 59*		4 14	4796 9*
STD	0500	02 21	34 53	27 60	0 336	4 13	4803 0
OBS	0524	04 28*	34 94*	27 73*			4835 3*
STD	0600	02 21	34 58	27 64	0 387	4 11	4809 1
OBS	0698	02 05*	34 62	27 69*		4 09	4812 8*
STD	0800	02 16	34 66	27 71	0 479	4 75	4820 7
OBS	0872	02 13	34 68	27 73		4 97	4824 6
STD	1000	02 07	34 72	27 76	0 562	4 73	4831 5
OBS	1045	02 04	34 73	27 77		4 64	4833 8
STD	1200	01 91	34 73	27 78	0 639	5 42	4841 1
OBS	1308	01 82	34 28*	27 43*		5 76	4844 2*
STD	1500	01 66	34 73	27 80	0 750	5 67	4855 3
OBS	1746	01 47	34 73	27 82		5 41	4867 1
STD	2000	01 27	34 73	27 83	0 924	4 79	4879 2
OBS	2190	01 13	34 72	27 83		4 52	4888 3
STD	2500		34 70			4 55	
OBS	2644	01 65*	34 68	27 76*		4 57	4922 6*

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0034	01	23	1961	06	57° 53′ S	151° 10′ W	3017	19

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
10	32		22	05 8	04 4	81	02	0	0	32	3			8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O₂ ml/l ↓	V_f ↓
STD	0000	03 16	33 91	27 02	0 000	7 47	4784 2
OBS	0000	03 16	33 91	27 02		7 47	4784 2
STD	0010	03 16	33 91	27 02	0 010	7 46	4784 8
OBS	0010	03 16	33 91	27 02			4784 8
STD	0020	03 00	33 92	27 05	0 021	7 46	4783 2
OBS	0020	03 00	33 92	27 05		7 46	4783 2
OBS	0029	02 89	33 95	27 08		7 46	4782 3
STD	0030	02 84	33 95	27 08	0 031	7 48	4781 6
OBS	0048	01 65	33 96	27 19		7 71	4765 5
STD	0050	01 40	33 96	27 21	0 049	7 72	4762 0
OBS	0072	-00 54	34 00	27 35		7 78	4734 1
STD	0075	-00 59	34 00	27 35	0 070	7 78	4733 6
OBS	0097	-00 85	34 02	27 37		7 78	4730 9
STD	0100	-00 85	34 02	27 37	0 088	7 76	4731 1
OBS	0145	-00 77	34 09	27 43		7 33	4735 3
STD	0150	-00 72	34 10	27 43	0 122	7 29	4736 4
OBS	0194	-00 21	34 18	27 48		6 72	4747 2
STD	0200	-00 12	34 20	27 49	0 153	6 58	4749 1
OBS	0243	00 59	34 31	27 54		5 65	4762 9
STD	0250	00 76	34 33	27 54	0 182	5 48	4765 9
OBS	0293	01 57	34 43	27 57		4 68	4780 9
STD	0300	01 59	34 44	27 58	0 209	4 63	4781 7
OBS	0391	01 84	34 53	27 63		4 23	4791 1
STD	0400	01 88	34 54	27 63	0 260	4 26	4792 3
OBS	0476	02 11	34 60	27 66		4 29	4800 4
STD	0500	02 12	34 61	27 67	0 306	4 14	4802 0
OBS	0572	02 15	34 65	27 70		3 85	4806 9
STD	0600	02 15	34 66	27 71	0 350	3 94	4808 6
OBS	0668	01 83*	34 65*	27 73*		4 55	4808 0*
OBS	0762	02 13	34 71	27 75		4 35	4818 2
STD	0800	02 08	34 71	27 75	0 432	4 39	4819 7
OBS	0954	01 93	34 72	27 77		4 52	4826 7
STD	1000	01 90	34 73	27 79	0 508	4 57	4829 1
OBS	1146	01 81	34 74	27 80		4 66	4836 5
STD	1200	01 76	34 74	27 80	0 580	4 48	4839 0
OBS	1434	01 56	34 74	27 82		4 43	4849 9
STD	1500	01 50	34 74	27 82	0 684	4 78	4853 0
OBS	1627	01 40	34 73	27 82		5 26	4859 0
OBS	1918		34 73			5 33	

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0035	01	23	1961	12	58° 22′ S	149° 51′ W	2834	13

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	32		20	05 0	03 1	88	03	6	8	32	3			8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ ΔD ↓	O_2 ml/l ↓	V_f ↓
STD	0000	02 78	33 98	27 11	0 000	8 02	4779 1
OBS	0000	02 78	33 98	27 11		8 02	4779 1
OBS	0009	02 75	33 98	27 12		7 61	4779 2
STD	0010	02 75	33 98	27 12	0 010	7 62	4779 3
OBS	0018	02 73	33 98	27 12		7 67	4779 5
STD	0020	02 72	33 98	27 12	0 019	7 68	4779 4
OBS	0027	02 70	33 98	27 12			4779 6
STD	0030	02 48	33 99	27 15	0 029	7 73	4776 6
OBS	0046	01 17	34 03	27 28			4758 6
STD	0050	00 63	34 05	27 33	0 045	7 74	4750 9
OBS	0068	-00 93	34 12	27 46		7 78	4728 4
STD	0075	-00 90	34 13	27 46	0 063	7 76	4729 3
OBS	0091	-00 83	34 15	27 48		7 69	4731 4
STD	0100	-00 80	34 16	27 49	0 078	7 64	4732 5
OBS	0137	-00 68	34 20	27 51		7 44	4736 7
STD	0150	-00 53	34 23	27 53	0 107	7 11	4739 9
OBS	0184	-00 13	34 29	27 56		6 34	4748 4
STD	0200	00 16	34 33	27 58	0 134	6 03	4753 9
STD	0250	00 90	34 43	27 62	0 159	5 20	4768 4
OBS	0281*	01 90*	34 59*	27 67*		4 29	4785 7*
STD	0300	01 43	34 52	27 65	0 183	4 62	4779 7
OBS	0324	01 60	34 55	27 66		4 42	4783 7
OBS	0378*	02 03*	34 61*	27 68*		4 00	4793 5*
OBS	0384	01 81	34 61	27 70		4 17	4790 6
STD	0400	01 83	34 62	27 70	0 227	4 28	4791 9
OBS	0444	01 91	34 64	27 71		4 39	4795 8
STD	0500	02 08	34 68	27 73	0 267	4 10	4801 7
OBS	0508	02 10	34 69	27 74		4 08	4802 6
STD	0600	02 05	34 71	27 76	0 306	4 26	4807 4
OBS	0632	02 03	34 72	27 77		4 34	4809 0
OBS	0760	01 97	34 72	27 77		4 73	4815 8
STD	0800	01 93	34 73	27 78	0 380	4 61	4817 6
OBS	0964	01 77	34 74	27 80		4 47	4825 1
STD	1000	01 74	34 74	27 81	0 451	4 58	4826 8
OBS	1108	01 64	34 74	27 81		4 81	4831 7
STD	1200		34 74			4 81	
OBS	1342		34 73			4 80	

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0036	01	23	1961	19	58° 47′ S	148° 39′ W	2880	22

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
10	32		15	04 4	03 9	92	01	0	4	32	3			5		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O₂ ml/l ↓	V_f ↓
STD	0000	01 69	34 20	27 38	0 000	7 84	4764 3
OBS	0000	01 69	34 20	27 38		7 84	4764 3
OBS	0009	01 71	34 20	27 38		7 64	4765 1
STD	0010	01 70	34 20	27 38	0 007	7 64	4765 0
OBS	0018	01 67	34 21	27 39		7 66	4765 1
STD	0020	01 67	34 21	27 39	0 014	7 67	4765 2
OBS	0028	01 68	34 22	27 39		7 69	4765 9
STD	0030	01 62	34 22	27 40	0 021	7 72	4765 1
OBS	0046	00 98	34 24	27 46		7 89	4756 7
STD	0050	00 63	34 24	27 48	0 034	7 89	4751 7
OBS	0069	-00 58	34 26	27 56		7 89	4734 5
STD	0075	-00 73	34 26	27 56	0 048	7 87	4732 5
OBS	0093	-01 08	34 28	27 59		7 80	4728 2
STD	0100	-01 19	34 29	27 60	0 061	7 76	4727 0
OBS	0141	-01 42	34 35	27 66		7 51	4726 0
STD	0150	-01 30	34 37	27 67	0 084	7 24	4728 5
OBS	0189	-00 75	34 46	27 73		6 26	4739 8
STD	0200	-00 61	34 48	27 74	0 104	6 09	4742 7
OBS	0238	00 00	34 56	27 77		5 44	4754 7
STD	0250	00 32	34 60	27 79	0 121	5 17	4760 5
OBS	0286	01 06	34 68	27 81		4 52	4774 0
STD	0300	01 11	34 68	27 80	0 137	4 43	4775 6
OBS	0385	01 30	34 70	27 81		4 13	4783 6
STD	0400	01 30	34 71	27 81	0 168	4 15	4784 5
OBS	0445	01 29	34 73	27 83		4 21	4787 1
STD	0500	01 27	34 73	27 83	0 198	4 29	4790 1
OBS	0535	01 25	34 73	27 83		4 34	4791 9
STD	0600	01 20	34 72	27 83	0 228	4 44	4795 0
OBS	0624	01 18	34 72	27 83		4 48	4796 1
OBS	0714	01 14	34 73	27 84		4 21	4800 9
STD	0800	01 07	34 72	27 84	0 287	4 34	4804 9
OBS	0892	01 00	34 71	27 83		4 44	4809 3
STD	1000	00 93	34 71	27 84	0 345	4 49	4814 7
OBS	1072	00 89	34 71	27 84		4 51	4818 4
STD	1200	00 81	34 71	27 85	0 403	4 52	4824 8
OBS	1342	00 74	34 70	27 84		4 54	4832 2
STD	1500	00 67	34 70	27 85	0 488	4 61	4840 5
OBS	1794	00 56	34 69	27 85		4 71	4856 3
STD	2000		34 70			4 76	
OBS	2245		34 71			4 81	

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0037	01	24	1961	00	59° 19′ S	147° 33′ W	2834	13

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
14	32		11	05 0	04 4	92	45		9	30	4			1		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ ΔD ↓	O₂ml/l ↓	V_f ↓
STD	0000	02 10	34 12	27 28	0 000	7 53	4769 9
OBS	0000	02 10	34 12	27 28		7 53	4769 9
OBS	0008	02 11	34 13	27 29		7 57	4770 6
STD	0010	02 10	34 14	27 30	0 008	7 55	4770 6
OBS	0017	02 07	34 15	27 31		7 51	4770 6
STD	0020	02 06	34 15	27 31	0 016	7 49	4770 6
OBS	0026	01 99	34 14	27 31		7 47	4769 9
STD	0030	01 92	34 14	27 31	0 023	7 50	4769 2
OBS	0043	01 54	34 13	27 33		7 63	4764 3
STD	0050	01 19	34 15	27 37	0 038	7 76	4759 7
OBS	0065	00 35	34 18	27 45		7 91	4748 1
STD	0075	-00 40	34 20	27 50	0 055	7 87	4737 3
OBS	0087	-01 07	34 22	27 54		7 80	4727 8
STD	0100	-01 24	34 25	27 57	0 069	7 71	4726 0
OBS	0131	-01 31	34 33	27 64		7 31	4727 1
STD	0150	-01 10	34 37	27 67	0 092	6 93	4731 7
OBS	0176	-00 58	34 45	27 71		6 22	4741 7
STD	0200	00 37	34 57	27 76	0 112	5 09	4758 1
OBS	0221	00 92	34 64	27 78		4 45	4767 9
STD	0250	01 14	34 67	27 79	0 128	4 25	4773 0
OBS	0266	01 23	34 68	27 79		4 17	4775 4
STD	0300	01 24	34 69	27 80	0 144	4 16	4777 6
OBS	0358	01 27	34 70	27 81		4 15	4781 5
STD	0400	01 22	34 70	27 81	0 176	4 40	4783 3
OBS	0406	01 21	34 70	27 81		4 42	4783 5
OBS	0490	01 16	34 70	27 81		4 38	4787 7
STD	0500	01 15	34 70	27 82	0 206	4 41	4788 2
OBS	0575	01 09	34 69	27 81		4 52	4791 7
STD	0600	01 08	34 69	27 81	0 237	4 44	4793 1
OBS	0662	01 05	34 69	27 81		4 33	4796 3
OBS	0749	00 96	34 69	27 82		4 41	4800 1
STD	0800	00 94	34 69	27 82	0 299	4 45	4802 9
OBS	0839	00 93	34 69	27 82		4 46	4805 0
STD	1000	00 84	34 69	27 83	0 359	4 25	4813 3
OBS	1022	00 82	34 69	27 83		4 22	4814 3
OBS	1115	00 75	34 69	27 83		4 54	4818 8
STD	1200	00 72	34 69	27 84	0 419	4 57	4823 4
OBS	1305	00 71	34 68	27 83		4 61	4829 4

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0038	01	27	1961	04	69° 52′S	119° 58′W	2875	28

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
06	21		00	51 0	51 6	87	02	6	6					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 67	33 72	27 16	0 000	6 83	4711 0
OBS	0000	-01 67	33 72	27 16		6 83	4711 0
STD	0010	-01 73	33 72	27 16	0 009	6 90	4710 6
OBS	0010	-01 73	33 72	27 16		6 90	4710 6
STD	0020	-01 72	33 74	27 17	0 018	6 84	4711 5
OBS	0020	-01 72	33 74	27 17		6 84	4711 5
STD	0030	-01 74	34 03	27 41	0 026	6 45	4713 0
OBS	0030	-01 74	34 03	27 41		6 45	4713 0
STD	0050	-01 80	34 15	27 51	0 039	6 25	4713 7
OBS	0050	-01 80	34 15	27 51		6 25	4713 7
STD	0075	-01 77	34 20	27 55	0 053	6 21	4715 9
OBS	0075	-01 77	34 20	27 55		6 21	4715 9
STD	0100	-01 59	34 25	27 58	0 066	6 09	4720 5
OBS	0100	-01 59	34 25	27 58		6 09	4720 5
STD	0150	-00 29	34 42	27 67	0 089	5 35	4744 4
OBS	0150	-00 29	34 42	27 67		5 35	4744 4
STD	0200	01 35	34 60	27 72	0 110	4 47	4772 9
OBS	0200	01 35	34 60	27 72		4 47	4772 9
STD	0250	01 44	34 67	27 77	0 128	4 31	4777 5
OBS	0250	01 44	34 67	27 77		4 31	4777 5
STD	0300	01 55	34 70	27 79	0 145	4 21	4782 2
OBS	0300	01 55	34 70	27 79		4 21	4782 2
STD	0400	01 59	34 72	27 80	0 178	4 16	4788 8
OBS	0400	01 59	34 72	27 80		4 16	4788 8
STD	0500	01 53	34 73	27 81	0 209	4 20	4793 9
OBS	0500	01 53	34 73	27 81		4 20	4793 9
STD	0600	01 47	34 73	27 82	0 241	4 30	4799 0
OBS	0600	01 47	34 73	27 82		4 30	4799 0
STD	0800	01 31	34 74	27 84	0 302	4 37	4808 6
OBS	0800	01 31	34 74	27 84		4 37	4808 6
STD	1000	01 14	34 73	27 84	0 361	4 39	4817 9
OBS	1000	01 14	34 73	27 84		4 39	4817 9
STD	1200	01 02	34 73	27 85	0 420	4 53	4828 0
OBS	1200	01 02	34 73	27 85		4 53	4828 0
STD	1500	00 87	34 72	27 85	0 507	4 58	4843 6
OBS	1500	00 87	34 72	27 85		4 58	4843 6
STD	2000	00 64	34 71	27 86	0 649	4 63	4869 8
OBS	2000	00 64	34 71	27 86		4 63	4869 8
STD	2500	00 43				4 80	
OBS	2500	00 43				4 80	
OBS	2800	00 38				4 80	

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0039	01	27	1961	21	70 ° 21′S	118 ° 56′W	2750	27

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
09	27		02	50 6	51 1	89	02	0	8					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 55	33 86	27 27	0 000	7 00	4713 5
OBS	0000	-01 55	33 86	27 27		7 00	4713 5
STD	0010	-01 56	33 85	27 26	0 008	7 02	4713 9
OBS	0010	-01 56	33 85	27 26		7 02	4713 9
STD	0020	-01 61	33 86	27 27	0 016	6 96	4713 7
OBS	0020	-01 61	33 86	27 27		6 96	4713 7
STD	0030	-01 68	33 94	27 34	0 024	6 83	4713 5
OBS	0030	-01 68	33 94	27 34		6 83	4713 5
OBS	0049	-01 75	34 15	27 51		6 26	4714 5
STD	0050	-01 74	34 15	27 51	0 037	6 26	4714 7
OBS	0074	-01 61	34 25	27 59		6 12	4718 6
STD	0075	-01 60	34 25	27 58	0 051	6 11	4718 8
OBS	0098	-01 33	34 30	27 62		5 83	4724 7
STD	0100	-01 32	34 30	27 62	0 063	5 82	4725 0
OBS	0148	-00 98	34 36	27 65		5 68	4733 4
STD	0150	-00 89	34 37	27 66	0 086	5 63	4735 0
OBS	0197	00 72	34 55	27 72		4 69	4763 1
STD	0200	00 77	34 56	27 73	0 107	4 66	4764 1
OBS	0247	01 36	34 64	27 75		4 28	4776 0
STD	0250	01 37	34 64	27 75	0 125	4 28	4776 3
OBS	0296	01 51	34 68	27 77		4 23	4781 3
STD	0300	01 52	34 68	27 77	0 143	4 23	4781 7
OBS	0396	01 59	34 71	27 79		4 21	4788 5
STD	0400	01 59	34 71	27 79	0 177	4 21	4788 8
OBS	0470	01 53	34 73	27 81		4 17	4792 1
STD	0500	01 51	34 73	27 81	0 209	4 19	4793 6
OBS	0564	01 47	34 73	27 82		4 22	4796 8
STD	0600	01 44	34 73	27 82	0 240	4 24	4798 6
OBS	0754	01 31	34 72	27 82		4 32	4805 8
STD	0800	01 27	34 72	27 82	0 302	4 35	4807 9
OBS	0944	01 16	34 71	27 82		4 42	4814 8
STD	1000	01 11	34 71	27 83	0 364	4 44	4817 4
OBS	1134	01 02	34 71	27 83		4 49	4824 0
STD	1200	00 99	34 71	27 83	0 425	4 52	4827 5
OBS	1421	00 88	34 72	27 85		4 59	4839 0
STD	1500	00 85	34 72	27 85	0 513	4 60	4843 3
OBS	1710	00 75	34 71	27 85		4 62	4854 2
OBS	1904	00 65	34 70	27 85		4 71	4864 2
STD	2000	00 61	34 70	27 85	0 655	4 74	4869 3
STD	2500	00 44	34 70	27 86	0 793	4 75	4896 3
OBS	2692	00 41	34 70	27 86		4 76	4907 2

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0040	01	28	1961	09	70° 53′ S	118° 26′ W	2688	24

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
11	25		98	51 2	51 7	90	02	0	8					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O₂ml/l ↓	V_f ↓
STD	0000	-01 69	33 87	27 28	0 000	6 88	4711 3
OBS	0000	-01 69	33 87	27 28		6 88	4711 3
STD	0010	-01 68	33 87	27 28	0 008	6 86	4712 1
OBS	0010	-01 68	33 87	27 28		6 86	4712 1
STD	0020	-01 69	33 91	27 31	0 016	6 88	4712 7
OBS	0020	-01 69	33 91	27 31		6 88	4712 7
STD	0030	-01 72	34 11	27 47	0 023	6 56	4713 7
OBS	0030	-01 67*	34 11	27 47*		6 56	4714 4*
STD	0050	-01 74	34 18	27 53	0 035	6 38	4714 8
OBS	0050	-01 74	34 18	27 53		6 38	4714 8
STD	0075	-01 71	34 24	27 58	0 048	6 28	4717 1
OBS	0075	-01 71	34 24	27 58		6 28	4717 1
STD	0100	-01 64	34 27	27 60	0 061	6 13	4719 8
OBS	0100	-01 64	34 27	27 60		6 13	4719 8
STD	0150	-01 25	34 36	27 66	0 084	5 87	4729 3
OBS	0150	-01 25	34 36	27 66		5 87	4729 3
STD	0200	-00 49	34 43	27 69	0 105	5 40	4744 4
OBS	0200	-00 49	34 43	27 69		5 40	4744 4
STD	0250	-00 14	34 50	27 73	0 124	5 11	4753 0
OBS	0250	-00 14	34 50	27 73		5 11	4753 0
STD	0300	00 56	34 60	27 77	0 142	4 73	4767 0
OBS	0300	00 56	34 60	27 77		4 73	4767 0
STD	0400	01 44	34 71	27 80	0 175	4 22	4786 6
OBS	0400	01 44	34 71	27 80		4 22	4786 6
OBS	0480	01 46	34 75	27 83		4 20	4791 8
STD	0500	01 45	34 75	27 83	0 205	4 22	4792 8
OBS	0577	01 40	34 73*	27 82*		4 28	4796 6*
STD	0600	01 38	34 75	27 84	0 234	4 30	4797 8
OBS	0674	01 31	34 77*	27 86*		4 35	4801 2*
OBS	0771	01 22	34 74	27 84		4 37	4805 5
STD	0800	01 19	34 74	27 85	0 292	4 38	4806 8
OBS	0964	01 06	34 74	27 85		4 44	4814 6
STD	1000	01 04	34 74	27 86	0 349	4 47	4816 5
OBS	1158	00 96	34 74	27 86		4 55	4824 7
STD	1200	00 94	34 74	27 86	0 404	4 55	4826 9
OBS	1451	00 84	34 73	27 86		4 55	4840 3
STD	1500	00 81	34 73	27 86	0 487	4 57	4842 7
OBS	1941	00 59	34 72	27 87		4 72	4865 6
STD	2000	00 57	34 72	27 87	0 622	4 73	4868 8
OBS	2437	00 43	34 71	27 87		4 77	4892 5

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0041	01	28	1961	20	71 ° 23 ′ S	118 ° 00 ′ W	2200	21

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
09	25		94	00 2	50 2	94	02	0	8					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$	O_2 ml/l ↓	V_f ↓
STD	0000	-01 76	34 07	27 44	0 000	6 87	4711 1
OBS	0000	-01 76	34 07	27 44		6 87	4711 1
STD	0010	-01 79	34 07	27 44	0 006	6 83	4711 2
OBS	0010	-01 79	34 07	27 44		6 83	4711 2
STD	0020	-01 79	34 08	27 45	0 013	6 78	4711 8
OBS	0020	-01 79	34 08	27 45		6 78	4711 8
STD	0030	-01 77	34 11	27 48	0 019	6 68	4712 9
OBS	0030	-01 77	34 11	27 48		6 68	4712 9
STD	0050	-01 76	34 26	27 60	0 030	6 38	4714 9
OBS	0050	-01 80*	34 26	27 60*		6 38	4714 2*
STD	0075	-01 75	34 31	27 64	0 042	6 28	4716 7
OBS	0075	-01 75	34 31	27 64		6 28	4716 7
STD	0100	-01 76	34 33	27 65	0 053	6 25	4718 1
OBS	0100	-01 76	34 33	27 65		6 25	4718 1
STD	0150	-01 78	34 35	27 67	0 075	6 23	4720 9
OBS	0150	-01 78	34 35	27 67		6 23	4720 9
STD	0200	-01 74	34 35	27 67	0 096	6 23	4724 5
OBS	0200	-01 74	34 35	27 67		6 23	4724 5
STD	0250	-01 42	34 38	27 68	0 117	6 02	4732 6
OBS	0250	-01 42	34 38	27 68		6 02	4732 6
STD	0300	-01 04	34 42	27 70	0 137	5 75	4741 8
OBS	0300	-01 04	34 42	27 70		5 75	4741 8
STD	0400	01 00	34 65	27 79	0 173	4 48	4779 8
OBS	0400	01 00	34 65	27 79		4 48	4779 8
STD	0500	01 47	34 72	27 81	0 205	4 41	4793 0
OBS	0500	01 47	34 72	27 81			4793 0
STD	0600	01 42	34 74	27 83	0 236	4 36	4798 3
OBS	0600	01 42	34 74	27 83		4 36	4798 3
OBS	0700	01 33	34 73	27 83			4802 9
STD	0800	01 23	34 73	27 83	0 296	4 30	4807 4
OBS	0800	01 23	34 73	27 83		4 30	4807 4
STD	1000	01 04	34 72	27 84	0 355	4 44	4816 4
OBS	1000	01 04	34 72	27 84		4 44	4816 4
STD	1200	00 91	34 73	27 86	0 413	4 54	4826 4
OBS	1200	00 91	34 73	27 86		4 54	4826 4
STD	1500	00 77	34 72	27 86	0 496	4 75	4842 1
OBS	1500	00 77	34 72	27 86		4 75	4842 1
STD	2000	00 52	34 71	27 86	0 633	4 72	4868 0
OBS	2000	00 52	34 71	27 86		4 72	4868 0
OBS	2100	00 49	34 71	27 87			4873 4

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0042	01	29	1961	06	71° 30′ S	117° 10′ W	1765	17

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
04	34		90	50 1	50 4	94	45	0	8					6		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O₂ml/l ↓	V_f ↓
STD	0000	-01 63	34 00	27 38	0 000	6 86	4712 8
OBS	0000	-01 63	34 00	27 38		6 86	4712 8
STD	0010	-01 65	34 01	27 39	0 007	6 84	4713 1
OBS	0010	-01 65	34 01	27 39		6 84	4713 1
STD	0020	-01 64	34 04	27 42	0 014	6 82	4714 0
OBS	0020	-01 64	34 04	27 42		6 82	4714 0
STD	0030	-01 64	34 12	27 48	0 020	6 69	4715 0
OBS	0030	-01 64	34 12	27 48		6 69	4715 0
STD	0050	-01 68	34 26	27 60	0 031	6 46	4716 1
OBS	0050	-01 68	34 26	27 60		6 46	4716 1
STD	0075	-01 66	34 33	27 65	0 043	6 38	4718 2
OBS	0075	-01 66	34 33	27 65		6 38	4718 2
STD	0100	-01 84	34 34	27 66	0 054	6 27	4716 9
OBS	0100	-01 84				6 27	
STD	0150	-01 82	34 35	27 67	0 075	6 26	4720 2
OBS	0150	-01 82	34 35	27 67		6 26	4720 2
STD	0200	-01 75	34 36	27 68	0 096	6 23	4724 4
OBS	0200	-01 75	34 36	27 68		6 23	4724 4
STD	0250	-01 54	34 37	27 68	0 117	6 07	4730 7
OBS	0250	-01 54	34 37	27 68		6 07	4730 7
STD	0300	-00 95	34 43	27 71	0 137	5 68	4743 2
OBS	0300	-00 95	34 43	27 71		5 68	4743 2
OBS	0350	00 18	34 56	27 76		5 01	4764 1
STD	0400	00 79	34 65	27 80	0 172	4 68	4776 7
OBS	0400	00 79	34 65	27 80		4 68	4776 7
STD	0500	01 27	34 71	27 82	0 203	4 39	4790 0
OBS	0500	01 27	34 71	27 82		4 39	4790 0
STD	0600	01 30	34 74	27 84	0 233	4 37	4796 5
OBS	0600	01 30	34 74	27 84		4 37	4796 5
STD	0800	01 09	34 74	27 85	0 290	4 43	4805 3
OBS	0800	01 09	34 74	27 85		4 43	4805 3
OBS	0900	01 00	34 74	27 86		4 54	4809 9
STD	1000	00 95	34 73	27 85	0 346	4 58	4815 1
OBS	1000	00 95	34 73	27 85		4 58	4815 1
STD	1200	00 85	34 72	27 85	0 402	4 59	4825 5
OBS	1200	00 85	34 72	27 85		4 59	4825 5
OBS	1400	00 74	34 72	27 86		4 73	4835 7
STD	1500	00 69	34 72	27 86	0 485	4 72	4840 9
OBS	1700	00 60	34 71	27 86		4 69	4851 4

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0043	01	29	1961	15	70° 59′ S	116° 56′ W	2685	26

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
03	32		90	00 0	50 4	92	02	0	8					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ ΔD ↓	O₂ml/l ↓	V_f ↓
STD	0000	-01 70	33 93	27 33	0 000	6 92	4711 4
OBS	0000	-01 70	33 93	27 33		6 92	4711 4
STD	0010	-01 75	33 93	27 33	0 008	6 92	4711 2
OBS	0010	-01 75	33 93	27 33		6 92	4711 2
STD	0020	-01 76	33 93	27 33	0 015	6 93	4711 6
OBS	0020	-01 76	33 93	27 33		6 93	4711 6
STD	0030	-01 74	33 92	27 32	0 023	6 93	4712 5
OBS	0030	-01 74	33 92	27 32		6 93	4712 5
STD	0050	-01 75	34 15	27 51	0 036	6 42	4714 5
OBS	0050	-01 75	34 15	27 51		6 42	4714 5
STD	0075	-01 64	34 23	27 57	0 050	6 27	4718 1
OBS	0075	-01 64	34 23	27 57		6 27	4718 1
STD	0100	-01 67	34 26	27 59	0 063	6 30	4719 3
OBS	0100	-01 67	34 26	27 59		6 30	4719 3
STD	0150	-01 34	34 34	27 65	0 086	6 04	4727 8
OBS	0150	-01 34	34 34	27 65		6 04	4727 8
STD	0200	-01 16	34 38	27 68	0 108	5 88	4733 8
OBS	0200	-01 16	34 38	27 68		5 88	4733 8
STD	0250	-00 08	34 50	27 73	0 127	5 14	4753 9
OBS	0250	-00 08	34 50	27 73		5 14	4753 9
STD	0300	00 44	34 56	27 75	0 146	4 82	4765 1
OBS	0300	00 44	34 56	27 75		4 82	4765 1
OBS	0350	01 27	34 67	27 78		4 35	4780 9
STD	0400	01 49	34 73	27 82	0 179	4 22	4787 4
OBS	0400	01 49	34 73	27 82		4 22	4787 4
STD	0500	01 48	34 74	27 82	0 210	4 24	4793 2
OBS	0500	01 48	34 72*	27 81*		4 24	4793 1*
STD	0600	01 38	34 75	27 84	0 239	4 32	4797 8
OBS	0600	01 38	34 75	27 84		4 32	4797 8
STD	0800	01 23	34 73	27 83	0 298	4 35	4807 4
OBS	0800	01 23	34 73	27 83		4 35	4807 4
STD	1000	01 06	34 71	27 83	0 359	4 49	4816 6
OBS	1000	01 06	34 71	27 83		4 49	4816 6
STD	1200	00 96	34 72	27 84	0 418	4 59	4827 1
OBS	1200	00 96	34 72	27 84		4 59	4827 1
STD	1500	00 81	34 72	27 85	0 504	4 68	4842 7
OBS	1500	00 81	34 72	27 85		4 68	4842 7
STD	2000	00 58	34 70	27 85	0 645	4 84	4868 8
OBS	2000	00 58	34 70	27 85		4 84	4868 8
STD	2500	00 43	34 70	27 86	0 782	4 84	4896 2
OBS	2600	00 41	34 70	27 86		4 84	4901 8

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0044	01	30	1961	00	70° 30′S	116° 39′W	3150	30

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	36		91	00 4	50 3	87	02	0	8					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O₂ ml/l ↓	V_f ↓
STD	0000	-01 60	33 84	27 25	0 000	7 11	4712 6
OBS	0000	-01 60	33 84	27 25		7 11	4712 6
STD	0010	-01 69	33 84	27 25	0 008	7 11	4711 8
OBS	0010	-01 69	33 84	27 25		7 11	4711 8
STD	0020	-01 73	33 85	27 26	0 016	7 12	4711 8
OBS	0020	-01 73	33 85	27 26		7 12	4711 8
STD	0030	-01 76	34 02	27 40	0 024	6 58	4712 6
OBS	0030	-01 76	34 02	27 40		6 58	4712 6
STD	0050	-01 81	34 16	27 52	0 037	6 82	4713 6
OBS	0050	-01 81	34 16	27 52		6 82	4713 6
STD	0075	-01 76	34 21	27 56	0 050	6 59	4716 1
OBS	0075	-01 76	34 21	27 56		6 59	4716 1
STD	0100	-01 67	34 24	27 58	0 063	6 47	4719 2
OBS	0100	-01 67	34 24	27 58		6 47	4719 2
STD	0150	-00 46	34 37	27 64	0 088	5 62	4741 6
OBS	0150	-00 46	34 37	27 64		5 62	4741 6
STD	0200	00 85	34 56	27 72	0 109	4 65	4765 3
OBS	0200	00 85	34 56	27 72		4 65	4765 3
STD	0250	01 28	34 64	27 76	0 127	4 40	4775 0
OBS	0250	01 28	34 64	27 76		4 40	4775 0
STD	0300	01 50	34 68	27 78	0 145	4 26	4781 4
OBS	0300	01 50	34 68	27 78		4 26	4781 4
OBS	0350	01 57	34 70	27 79		4 22	4785 5
STD	0400	01 59	34 72	27 80	0 178	4 26	4788 8
OBS	0400	01 59	34 72	27 80		4 26	4788 8
STD	0500	01 55	34 73	27 81	0 210	4 27	4794 2
STD	0600	01 49	34 73	27 82	0 241	4 30	4799 3
OBS	0600	01 49	34 73	27 82		4 30	4799 3
STD	0800	01 32	34 73	27 83	0 304	4 42	4808 7
OBS	0800	01 32	34 73	27 83		4 42	4808 7
STD	1000	01 16	34 72	27 83	0 365	4 47	4818 2
OBS	1000	01 16	34 72	27 83		4 47	4818 2
STD	1200	01 02	34 72	27 84	0 425	4 59	4828 0
OBS	1200	01 02	34 72	27 84		4 59	4828 0
STD	1500	00 88	34 71	27 84	0 514	4 68	4843 7
OBS	1500	00 88	34 71	27 84		4 68	4843 7
STD	2000	00 66	34 71	27 86	0 659	4 74	4870 1
OBS	2000	00 66	34 71	27 86		4 74	4870 1
STD	2500	00 46	34 70	27 86	0 797	4 87	4896 6
OBS	2500	00 46	34 70	27 86		4 87	4896 6
STD	3000	00 38	34 70	27 86	0 930	4 88	4925 0
OBS	3000	00 38	34 70	27 86		4 88	4925 0

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0045	01	30	1961	09	70° 03′S	116° 30′W	3545	30

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
06	02		92	50 6	50 8	95	56	0	3					5		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O₂ml/l ↓	V_f ↓
STD	0000	-01 77	33 78	27 21	0 000	6 98	4709 6
OBS	0000	-01 77	33 78	27 21		6 98	4709 6
STD	0010	-01 76	33 77	27 20	0 009	7 13	4710 4
OBS	0010	-01 76	33 77	27 20		7 13	4710 4
STD	0020	-01 78	33 80	27 22	0 017	7 09	4710 8
OBS	0020	-01 78	33 80	27 22		7 09	4710 8
STD	0030	-01 76	33 80	27 22	0 026	7 05	4711 7
OBS	0030	-01 76	33 80	27 22		7 05	4711 7
STD	0050	-01 76	34 12	27 48	0 040	6 77	4714 3
OBS	0050	-01 76	34 12	27 48		6 77	4714 3
STD	0075	-01 78	34 22	27 57	0 055	6 55	4715 9
OBS	0075	-01 78	34 22	27 57		6 55	4715 9
STD	0100	-01 70	34 23	27 57	0 068	6 45	4718 7
OBS	0100	-01 70	34 23	27 57		6 45	4718 7
STD	0150	-00 55	34 39	27 66	0 092	5 61	4740 3
OBS	0150	-00 55	34 39	27 66		5 61	4740 3
STD	0200	00 76	34 53	27 70	0 113	4 70	4763 8
OBS	0200	00 76	34 53	27 70		4 70	4763 8
STD	0250	01 35	34 61	27 73	0 132	4 27	4775 9
OBS	0250	01 35	34 61	27 73		4 27	4775 9
STD	0300	01 58	34 66	27 75	0 151	4 16	4782 5
OBS	0300	01 58	34 66	27 75		4 16	4782 5
OBS	0350	01 67	34 69	27 77		4 12	4786 9
OBS	0393	01 66	34 69	27 77		4 16	4789 3
STD	0400	01 66	34 69	27 77	0 187	4 16	4789 7
STD	0500	01 62	34 71	27 79	0 221	4 17	4795 2
OBS	0590	01 57	34 72	27 80		4 20	4799 8
STD	0600	01 56	34 72	27 80	0 254	4 21	4800 3
OBS	0788	01 41	34 72	27 81		4 32	4809 2
STD	0800	01 40	34 72	27 81	0 319	4 32	4809 8
OBS	0985	01 25	34 71	27 82		4 35	4818 6
STD	1000	01 24	34 71	27 82	0 383	4 37	4819 3
OBS	1183	01 11	34 71	27 83		4 51	4828 3
STD	1200	01 10	34 71	27 83	0 446	4 51	4829 1
OBS	1480	00 95	34 71	27 84		4 55	4843 5
STD	1500	00 94	34 71	27 84	0 539	4 55	4844 6
OBS	1978	00 72	34 70	27 84		4 64	4869 6
STD	2000	00 71	34 70	27 84	0 688	4 64	4870 8
OBS	2477	00 52	34 70	27 86		4 71	4896 2
STD	2500	00 51	34 70	27 86	0 830	4 71	4897 4
OBS	2976	00 39	34 69	27 86		4 80	4923 7

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0046	01	30	1961	17	70° 05′ S	115° 31′ W	3450	30

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
06	05		93	50 6	51 2	87	02	0	8					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O₂ ml/l ↓	V_f ↓
STD	0000	-01 62	33 71	27 15	0 000	7 39	4711 7
OBS	0000	-01 62	33 71	27 15		7 39	4711 7
STD	0010	-01 64	33 70	27 14	0 009	7 35	4712 0
OBS	0010	-01 64	33 70	27 14			4712 0
STD	0020	-01 70	33 81	27 23	0 018	7 31	4712 1
OBS	0020	-01 70	33 81	27 23		7 31	4712 1
STD	0030	-01 71	34 10	27 47	0 026	6 86	4713 8
OBS	0030	-01 71	34 10	27 47		6 86	4713 8
STD	0050	-01 81	34 14	27 50	0 038	6 87	4713 5
OBS	0050	-01 81	34 14	27 50		6 87	4713 5
STD	0075	-01 77	34 20	27 55	0 052	6 78	4715 9
OBS	0075	-01 77	34 20	27 55		6 78	4715 9
STD	0100	-01 73	34 23	27 57	0 065	6 63	4718 2
OBS	0100	-01 73	34 23	27 57		6 63	4718 2
OBS	0125	-01 51	34 27	27 60		6 33	4723 3
STD	0150	-00 57	34 36	27 64	0 089	5 72	4739 9
OBS	0150	-00 57	34 36	27 64		5 72	4739 9
STD	0200	00 59	34 51	27 70	0 111	4 89	4761 2
OBS	0200	00 59	34 51	27 70		4 89	4761 2
STD	0250	01 30	34 62	27 74	0 131	4 37	4775 2
OBS	0250	01 30	34 62	27 74		4 37	4775 2
STD	0300	01 54	34 67	27 76	0 149	4 22	4781 9
OBS	0300	01 54	34 67	27 76		4 22	4781 9
STD	0400	01 66	34 70	27 78	0 184	4 15	4789 8
OBS	0400	01 66	34 70	27 78		4 15	4789 8
STD	0500	01 62	34 72	27 80	0 217	4 21	4795 2
STD	0600	01 57	34 74	27 82	0 249	4 26	4800 5
OBS	0600	01 57	34 74	27 82		4 26	4800 5
STD	0800	01 41	34 74	27 83	0 312	4 32	4810 0
OBS	0800	01 41				4 32	
STD	1000	01 24	34 73	27 83	0 373	4 39	4819 4
OBS	1000	01 24	34 73	27 83		4 39	4819 4
STD	1200	01 11	34 72	27 83	0 434	4 51	4829 3
OBS	1200	01 11	34 72	27 83		4 51	4829 3
STD	1500	00 93	34 72	27 85	0 524	4 55	4844 5
OBS	1500	00 93	34 72	27 85		4 55	4844 5
STD	2000	00 71	34 71	27 85	0 669	4 63	4870 8
OBS	2000	00 71	34 71	27 85		4 63	4870 8
STD	2500	00 49	34 71	27 87	0 807	4 78	4897 1
OBS	2500	00 49	34 71	27 87		4 78	4897 1
STD	3000	00 39	34 71	27 87	0 938	4 78	4925 2
OBS	3000	00 39	34 71	27 87		4 78	4925 2

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0047	01	31	1961	02	70° 08′ S	114° 14′ W	3540	34

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
00	00		94	50 3	50 7	93	02	0	8					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O₂ml/l ↓	V_f ↓
STD	0000	-01 76	33 74	27 18	0 000	7 27	4709 6
OBS	0000	-01 76	33 74	27 18		7 27	4709 6
STD	0010	-01 79	33 74	27 18	0 009	7 27	4709 7
OBS	0010	-01 79	33 74	27 18		7 27	4709 7
STD	0020	-01 77	33 77	27 20	0 018	7 27	4710 8
OBS	0020	-01 77	33 77	27 20		7 27	4710 8
STD	0030	-01 73	33 88	27 29	0 026	7 14	4712 5
OBS	0030	-01 73	33 88	27 29		7 14	4712 5
STD	0050	-01 76	34 15	27 51	0 040	6 76	4714 4
OBS	0050	-01 76	34 15	27 51		6 76	4714 4
STD	0075	-01 75	34 20	27 55	0 054	6 61	4716 2
OBS	0075	-01 75	34 20	27 55		6 61	4716 2
STD	0100	-01 78	34 22	27 57	0 067	6 52	4717 3
OBS	0100	-01 78	34 22	27 57		6 52	4717 3
OBS	0125	-01 46	34 26	27 59		6 32	4724 1
STD	0150	-00 71	34 34	27 63	0 092	5 83	4737 6
OBS	0150	-00 71	34 34	27 63		5 83	4737 6
OBS	0175	-00 08	34 42	27 66		5 32	4749 1
STD	0200	00 62	34 52	27 71	0 114	4 78	4761 7
OBS	0200	00 62	34 52	27 71		4 78	4761 7
STD	0250	01 31	34 63	27 75	0 133	4 29	4775 4
OBS	0250	01 31	34 63	27 75		4 29	4775 4
STD	0300	01 45	34 64	27 75	0 151	4 22	4780 5
OBS	0300	01 45	34 64	27 75			4780 5
STD	0400	01 66	34 70	27 78	0 187	4 16	4789 8
OBS	0400	01 66	34 70	27 78		4 16	4789 8
STD	0500	01 64	34 71	27 79	0 221	4 22	4795 5
OBS	0500	01 64	34 71	27 79		4 22	4795 5
STD	0600	01 57	34 71	27 79	0 255	4 25	4800 4
OBS	0600	01 57	34 71	27 79		4 25	4800 4
STD	0800	01 41	34 73	27 82	0 320	4 40	4810 0
OBS	0800	01 41	34 73	27 82		4 40	4810 0
STD	1000	01 28	34 72	27 82	0 383	4 43	4819 9
OBS	1000	01 28	34 72	27 82		4 43	4819 9
STD	1200	01 14	34 71	27 82	0 446	4 45	4829 7
STD	1500	00 96	34 70	27 83	0 540	4 50	4844 8
OBS	1500	00 96	34 70	27 83		4 50	4844 8
STD	2000	00 73	34 71	27 85	0 691	4 66	4871 1
OBS	2000	00 73	34 71	27 85		4 66	4871 1
STD	2500	00 50	34 69	27 85	0 833	4 77	4897 2
OBS	2500	00 50	34 69	27 85		4 77	4897 2
STD	3000	00 39	34 69	27 86	0 972	4 80	4925 1
OBS	3000	00 39	34 69	27 86		4 80	4925 1
OBS	3400	00 42	34 69	27 85		4 85	4949 1

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0048	01	31	1961	10	70° 07′S	112° 58′W	3680	35

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
02	09		94	50 4	50 8	93	02	0	8					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 77	33 75	27 18	0 000	7 27	4709 5
OBS	0000	-01 77	33 75	27 18		7 27	4709 5
STD	0010	-01 79	33 75	27 18	0 009	7 16	4709 8
OBS	0010	-01 79	33 75	27 18		7 16	4709 8
STD	0020	-01 79	33 74	27 18	0 018	7 23	4710 3
OBS	0020	-01 79	33 74	27 18		7 23	4710 3
STD	0030	-01 77	33 76	27 19	0 027	7 17	4711 3
OBS	0030	-01 77	33 76	27 19		7 17	4711 3
STD	0050	-01 73	34 10	27 47	0 042	6 91	4714 6
OBS	0050	-01 73	34 10	27 47		6 91	4714 6
STD	0075	-01 56	34 24	27 58	0 056	6 61	4719 4
OBS	0075	-01 56	34 24	27 58		6 61	4719 4
STD	0100	-01 17	34 28	27 60	0 069	6 29	4727 2
OBS	0100	-01 17	34 28	27 60		6 29	4727 2
OBS	0125	-00 42	34 37	27 64		5 75	4740 7
STD	0150	00 44	34 47	27 68	0 092	5 15	4755 8
OBS	0150	00 44	34 47	27 68		5 15	4755 8
OBS	0175	00 97	34 55	27 71		4 80	4765 5
STD	0200	01 13	34 59	27 73	0 112	4 63	4769 6
OBS	0200	01 13	34 59	27 73		4 63	4769 6
STD	0250	01 36	34 62	27 74	0 131	4 37	4776 1
OBS	0250	01 36	34 62	27 74			4776 1
STD	0300	01 42	34 67	27 77	0 149	4 21	4780 1
OBS	0300		34 67			4 21	
STD	0400	01 52	34 71	27 80	0 182	4 21	4787 7
OBS	0400		34 71			4 21	
STD	0500	01 51	34 72	27 81	0 215	4 23	4793 6
OBS	0500		34 72			4 23	
STD	0600	01 57	34 73	27 81	0 247	4 24	4800 5
OBS	0600	01 57	34 73	27 81		4 24	4800 5
STD	0800	01 44	34 74	27 83	0 310	4 38	4810 5
OBS	0800	01 44	34 74	27 83		4 38	4810 5
STD	1000	01 29	34 74	27 84	0 371	4 43	4820 2
OBS	1000	01 29	34 74	27 84		4 43	4820 2
STD	1200	01 14	34 73	27 84	0 431	4 44	4829 8
OBS	1200	01 14	34 73	27 84		4 44	4829 8
STD	1500	00 98	34 72	27 84	0 521	4 58	4845 2
OBS	1500	00 98	34 72	27 84		4 58	4845 2
STD	2000	00 83	34 71	27 84	0 671	4 72	4872 6
OBS	2000	00 83	34 74*	27 87*		4 72	4872 7*
STD	2500	00 54	34 71	27 86	0 814	4 73	4897 9
OBS	2500	00 54	34 71	27 86		4 73	4897 9
STD	3000	00 42	34 71	27 87	0 948	4 81	4925 6
OBS	3000	00 42	34 71	27 87		4 81	4925 6
OBS	3500	00 35	34 68	27 85		4 78	4953 9

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0049	01	31	1961	21	70° 08′ S	111° 30′ W	3470	33

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ▼	WET ▼			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	09		94	00 8	00 4	92	02	0	8					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ▼	S‰ O ▼	σ_t ▼	$\Sigma \Delta D$	O₂ml/l ▼	V_f ▼
STD	0000	-01 75	33 64	27 09	0 000	7 25	4709 3
OBS	0000	-01 75	33 64	27 09		7 25	4709 3
STD	0010	-01 79	33 62	27 08	0 010	7 28	4709 2
OBS	0010	-01 79	33 62	27 08		7 28	4709 2
STD	0020	-01 78	33 66	27 11	0 020	7 30	4710 1
OBS	0020	-01 78	33 66	27 11		7 30	4710 1
STD	0030	-01 75	33 72	27 16	0 029	7 24	4711 5
OBS	0030	-01 75	33 72	27 16		7 24	4711 5
STD	0050	-01 72	34 14	27 50	0 044	6 75	4715 0
OBS	0050	-01 72	34 14	27 50		6 75	4715 0
STD	0075	-01 65	34 22	27 56	0 058	6 55	4717 9
OBS	0075	-01 65	34 22	27 56		6 55	4717 9
STD	0100	-01 39	34 26	27 59	0 071	6 31	4723 7
OBS	0100	-01 39	34 26	27 59		6 31	4723 7
OBS	0125	-00 42	34 36	27 63		5 76	4740 7
STD	0150	00 27	34 46	27 68	0 094	5 10	4753 1
OBS	0150	00 27	34 46	27 68		5 10	4753 1
OBS	0175	00 78	34 53	27 70		4 73	4762 6
STD	0200	01 15	34 59	27 73	0 114	4 45	4769 9
OBS	0200	01 15	34 59	27 73		4 45	4769 9
STD	0250	01 49	34 65	27 75	0 133	4 22	4778 1
OBS	0250	01 49	34 65	27 75		4 22	4778 1
STD	0300	01 61	34 68	27 77	0 151	4 15	4783 0
OBS	0300	01 61	34 68	27 77		4 15	4783 0
STD	0400	01 68	34 71	27 79	0 185	4 16	4790 1
OBS	0400	01 68	34 71	27 79			4790 1
STD	0500	01 63	34 72	27 80	0 219	4 19	4795 4
OBS	0500		34 72			4 19	
STD	0600	01 57	34 73	27 81	0 251	4 25	4800 5
OBS	0600	01 57	34 73	27 81		4 25	4800 5
STD	0800	01 42	34 73	27 82	0 315	4 30	4810 2
OBS	0800	01 42	34 73	27 82		4 30	4810 2
STD	1000	01 28	34 73	27 83	0 377	4 43	4820 0
OBS	1000	01 28	34 73	27 83		4 43	4820 0
STD	1200	01 12	34 73	27 84	0 438	4 43	4829 5
OBS	1200	01 12	34 73	27 84		4 43	4829 5
STD	1500	00 94	34 73	27 85	0 526	4 64	4844 7
OBS	1500	00 94	34 73	27 85		4 64	4844 7
STD	2000	00 74	34 71	27 85	0 671	4 68	4871 3
OBS	2000	00 74	34 71	27 85		4 68	4871 3
STD	2500	00 53	34 70	27 86	0 813	4 69	4897 7
OBS	2500	00 53	34 70	27 86		4 69	4897 7
STD	3000	00 42	34 71	27 87	0 948	4 80	4925 6
OBS	3000	00 42	34 71	27 87		4 80	4925 6
OBS	3300	00 39	34 71	27 87		4 76	4942 9

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0050	02	01	1961	17	69° 43′ S	111° 26′ W	3523	34

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
02	09		93	51 4	51 8	92	02	6	4					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ O ↓	σ_t ↓	ΣΔD ↓	O₂ml/l ↓	V_f ↓
STD	0000	-01 61	33 13	26 68	0 000	7 52	4709 4
OBS	0000	-01 61	33 13	26 68		7 52	4709 4
STD	0010	-01 70	33 12	26 67	0 014	7 56	4708 5
OBS	0010	-01 70	33 12	26 67		7 56	4708 5
STD	0020	-01 65	33 55	27 02	0 026	7 46	4711 7
OBS	0020	-01 65	33 55	27 02		7 46	4711 7
STD	0030	-01 69	33 77	27 20	0 035	7 03	4712 7
OBS	0030	-01 75*	33 77	27 20*		7 03	4711 7*
STD	0050	-01 72	34 06	27 43	0 051	6 63	4714 6
OBS	0050	-01 72	34 06	27 43		6 63	4714 6
STD	0075	-01 65	34 18	27 53	0 066	6 34	4717 7
OBS	0075	-01 65	34 18	27 53		6 34	4717 7
STD	0100	-01 47	34 25	27 58	0 079	6 15	4722 4
OBS	0100	-01 47	34 25	27 58		6 15	4722 4
OBS	0125	-00 79	34 31	27 61		5 67	4734 8
STD	0150	-00 21	34 40	27 65	0 103	5 22	4745 6
OBS	0150	-00 21	34 40	27 65		5 22	4745 6
OBS	0175	00 34	34 47	27 68		4 91	4755 7
STD	0200	00 81	34 57	27 73	0 124	4 49	4764 7
OBS	0200	00 81	34 57	27 73		4 49	4764 7
STD	0250	01 31	34 62	27 74	0 142	4 16	4775 3
OBS	0250	01 31	34 62	27 74		4 16	4775 3
STD	0300	01 47	34 67	27 77	0 160	4 05	4780 9
OBS	0300		34 67			4 05	
STD	0400	01 64	34 70	27 78	0 195	3 97	4789 5
OBS	0400	01 64	34 74*	27 81*		3 97	4789 6*
STD	0500	01 61	34 72	27 80	0 229	4 05	4795 1
OBS	0500	01 61	34 72	27 80		4 05	4795 1
STD	0600	01 55	34 73	27 81	0 261	4 12	4800 2
OBS	0600	01 55	34 73	27 81		4 12	4800 2
STD	0800	01 40	34 73	27 82	0 324	4 17	4809 9
OBS	0800	01 40	34 73	27 82		4 17	4809 9
STD	1000	01 23	34 73	27 83	0 386	4 21	4819 2
OBS	1000	01 23	34 73	27 83		4 21	4819 2
STD	1200	01 11	34 73	27 84	0 446	4 25	4829 4
OBS	1200	01 11	34 73	27 84		4 25	4829 4
STD	1500	00 91	34 72	27 85	0 535	4 41	4844 2
OBS	1500	00 91	34 72	27 85		4 41	4844 2
STD	2000	00 71	34 71	27 85	0 680	4 49	4870 8
OBS	2000	00 71	34 71	27 85		4 49	4870 8
STD	2500	00 51	34 71	27 86	0 819	4 49	4897 4
OBS	2500	01 63*	34 71	27 79*		4 49	4914 0*
STD	3000	00 39	34 71	27 87	0 950	4 61	4925 2
OBS	3000	00 39	34 71	27 87		4 61	4925 2
OBS	3400	00 35	34 70	27 87		4 59	4948 1

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0051	02	02	1961	01	69° 13′ S	111° 28′ W	3690	35

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
03	05		91	50 6	51 7	81	02	6	8					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 14	33 13	26 66	0 000	7 61	4716 8
OBS	0000	-01 14	33 13	26 66		7 61	4716 8
STD	0010	-01 61	33 46	26 94	0 013	7 46	4711 4
OBS	0010	-01 61	33 46	26 94		7 46	4711 4
STD	0020	-01 66	33 56	27 03	0 023	7 31	4711 6
OBS	0020	-01 66	33 56	27 03		7 31	4711 6
STD	0030	-01 66	33 82	27 24	0 033	7 01	4713 3
OBS	0030	-01 66	33 82	27 24		7 01	4713 3
STD	0050	-01 67	34 08	27 45	0 047	6 51	4715 5
OBS	0050	-01 67	34 08	27 45		6 51	4715 5
STD	0075	-01 25	34 23	27 56	0 062	6 03	4724 3
OBS	0075	-01 25	34 23	27 56		6 03	4724 3
STD	0100	-00 47	34 34	27 62	0 075	5 50	4738 4
OBS	0100	-00 47	34 34	27 62		5 50	4738 4
OBS	0125	00 21	34 43	27 66		4 89	4750 6
STD	0150	00 95	34 54	27 70	0 097	4 39	4763 7
OBS	0150	00 95	34 54	27 70		4 39	4763 7
OBS	0175	01 24	34 58	27 71		4 20	4769 7
STD	0200	01 48	34 61	27 72	0 117	4 05	4774 8
OBS	0200	01 48	34 61	27 72		4 05	4774 8
STD	0250	01 69	34 66	27 75	0 136	3 95	4781 1
OBS	0250	01 69	34 66	27 75		3 95	4781 1
STD	0300	01 76	34 68	27 76	0 154	3 92	4785 2
OBS	0300	01 76	34 68	27 76		3 92	4785 2
STD	0400	01 78	34 70	27 77	0 190	3 97	4791 5
OBS	0400	01 78	34 70	27 77		3 97	4791 5
STD	0500	01 73	34 73	27 80	0 224	4 01	4796 9
OBS	0500	01 73	34 73	27 80		4 01	4796 9
STD	0600	01 66	34 73	27 80	0 257	4 07	4801 8
OBS	0600	01 66	34 73	27 80		4 07	4801 8
STD	0800	01 49	34 73	27 82	0 322	4 14	4811 2
OBS	0800	01 49	34 73	27 82		4 14	4811 2
STD	1000	01 35	34 73	27 83	0 386	4 17	4821 0
OBS	1000	01 35	34 73	27 83		4 17	4821 0
STD	1200	01 21	34 73	27 84	0 448	4 19	4830 8
OBS	1200	01 21	34 73	27 84		4 19	4830 8
STD	1500	01 03	34 72	27 84	0 540	4 44	4845 9
OBS	1500	01 03	34 72	27 84		4 44	4845 9
STD	2000	00 77	34 71	27 85	0 689	4 36	4871 7
OBS	2000	00 77	34 71	27 85		4 36	4871 7
STD	2500	00 55	34 71	27 86	0 831	4 59	4898 0
OBS	2500	00 55	34 71	27 86		4 59	4898 0
STD	3000	00 53	34 71	27 86	0 968	4 64	4927 3
OBS	3000	00 53	34 71	27 86		4 64	4927 3
OBS	3500		34 70			4 61	

SURFACE OBSERVATIONS									
NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0052	02	02	1961	09	69° 13′S	110° 08′W	3731	35

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ▼	WET ▼			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
02	36		91	00 0	50 9	84	03	6	8					8		

	SUBSURFACE OBSERVATIONS															
	SAMPLE DEPTH (M)	T °C ▼		S‰ ▼		σ_t ▼		$\Sigma\Delta D$ ▼		O_2 ml/l ▼		V_f ▼	
STD	0000	−00	87	32	94	26	50	0	000	7	78	4720	2
OBS	0000	−00	87	32	94	26	50			7	78	4720	2
STD	0010	−01	12	33	00	26	56	0	015	7	78	4717	1
OBS	0010	−01	12	33	00	26	56			7	78	4717	1
STD	0020	−01	43	33	23	26	75	0	029	7	84	4713	8
OBS	0020	−01	43	33	23	26	75			7	84	4713	8
STD	0030	−01	57	33	92	27	32	0	039	7	40	4715	2
OBS	0030	−01	57	33	92	27	32			7	40	4715	2
STD	0050	−01	72	34	02	27	40	0	054	6	71	4714	4
OBS	0050	−01	72	34	02	27	40			6	71	4714	4
STD	0075	−01	28	34	19	27	53	0	069	6	06	4723	6
OBS	0075	−01	28	34	19	27	53			6	06	4723	6
STD	0100	−00	47	34	32	27	60	0	083	5	46	4738	3
OBS	0100	−00	47	34	32	27	60			5	46	4738	3
OBS	0125	00	31	34	42	27	64			4	90	4752	1
STD	0150	00	96	34	51	27	68	0	106	4	40	4763	7
OBS	0150	00	96	34	51	27	68			4	40	4763	7
OBS	0175	01	18	34	56	27	70			4	25	4768	7
STD	0200	01	42	34	60	27	72	0	126	4	08	4773	9
OBS	0200	01	42	34	60	27	72			4	08	4773	9
STD	0250	01	59	34	64	27	74	0	146	3	99	4779	5
OBS	0250	01	59	34	64	27	74			3	99	4779	5
STD	0300	01	79	34	67	27	75	0	164	4	04	4785	6
OBS	0300	01	79	34	67	27	75			4	04	4785	6
STD	0400	01	77	34	70	27	77	0	201	4	04	4791	4
STD	0500	01	73	34	72	27	79	0	235	4	04	4796	8
OBS	0500	01	73	34	72	27	79			4	04	4796	8
STD	0600	01	68	34	72	27	79	0	269	4	09	4802	0
OBS	0600	01	68	34	72	27	79			4	09	4802	0
STD	0800	01	53	34	74	27	82	0	335	4	13	4811	8
OBS	0800	01	53	34	74	27	82			4	13	4811	8
STD	1000	01	36	34	73	27	83	0	398	4	30	4821	2
OBS	1000	01	36	34	73	27	83			4	30	4821	2
STD	1200	01	23	34	73	27	83	0	461	4	27	4831	1
OBS	1200	01	23	34	73	27	83			4	27	4831	1
STD	1500	01	06	34	73	27	85	0	552	4	32	4846	4
OBS	1500	01	06	34	73	27	85			4	32	4846	4
STD	2000	00	79	34	71	27	85	0	701	4	50	4872	0
OBS	2000	00	79	34	71	27	85			4	50	4872	0
STD	2500	00	57	34	71	27	86	0	844	4	54	4898	3
OBS	2500	00	57	34	71	27	86			4	54	4898	3
STD	3000	00	43	34	71	27	87	0	978	4	71	4925	8
OBS	3000	00	43	34	71	27	87			4	71	4925	8
OBS	3500	00	47	34	71	27	87			4	61	4955	9

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0053	02	02	1961	16	69° 13′S	108° 42′W	4120	35

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY	WET			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
00	00		91	50 0	51 1	79	01	6	7					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C	S‰	σ_t	$\Sigma \Delta D$	O_2 ml/l	V_f
STD	0000	00 23	33 16	26 63	0 000	7 51	4738 1
OBS	0000	00 23	33 16	26 63		7 51	4738 1
STD	0010	-00 09	33 23	26 70	0 014	7 62	4734 1
OBS	0010	-00 09	33 23	26 70		7 62	4734 1
STD	0020	-00 35	33 25	26 73	0 027	7 69	4730 8
OBS	0020	-00 35	33 25	26 73		7 69	4730 8
STD	0030	-01 41	33 80	27 21	0 038	7 80	4717 2
OBS	0030	-01 41	33 80	27 21		7 80	4717 2
STD	0050	-01 72	34 00	27 39	0 054	7 00	4714 4
OBS	0050	-01 72	34 00	27 39		7 00	4714 4
STD	0075	-01 72	34 09	27 46	0 070	6 78	4716 2
OBS	0075	-01 72	34 09	27 46		6 78	4716 2
STD	0100	-01 59	34 14	27 50	0 085	6 54	4720 0
OBS	0100	-01 59	34 14	27 50		6 54	4720 0
OBS	0125	-00 57	34 26	27 56		5 74	4738 0
STD	0150	00 74	34 43	27 63	0 112	4 74	4760 1
OBS	0150	00 74	34 43	27 63		4 74	4760 1
OBS	0175	01 29	34 51	27 65		4 28	4770 1
STD	0200	01 57	34 56	27 67	0 135	4 04	4775 9
OBS	0200	01 57	34 56	27 67		4 04	4775 9
STD	0250	01 69	34 61	27 70	0 156	3 98	4780 9
OBS	0250	01 69	34 61	27 70		3 98	4780 9
OBS	0294	01 79	34 63	27 71		3 89	4785 0
STD	0300	01 80	34 63	27 71	0 176	3 89	4785 5
OBS	0393	01 85	34 68	27 75		3 88	4792 0
STD	0400	01 85	34 68	27 75	0 215	3 89	4792 4
OBS	0492	01 83	34 71	27 77		3 91	4797 8
STD	0500	01 83	34 71	27 77	0 252	3 90	4798 2
OBS	0590	01 80	34 72	27 78		3 84	4803 2
STD	0600	01 79	34 72	27 79	0 287	3 86	4803 6
OBS	0788	01 63	34 74	27 81		4 08	4812 6
STD	0800	01 62	34 74	27 81	0 354	4 09	4813 1
OBS	0987	01 52	34 74	27 82		4 18	4822 8
STD	1000	01 51	34 74	27 82	0 419	4 17	4823 4
OBS	1185	01 38	34 74	27 83		4 12	4832 5
STD	1200	01 37	34 74	27 83	0 483	4 13	4833 2
OBS	1483	01 16	34 73	27 84		4 24	4846 9
STD	1500	01 15	34 73	27 84	0 576	4 24	4847 8
OBS	1981	00 91	34 72	27 85		4 25	4872 7
STD	2000	00 90	34 72	27 85	0 729	4 24	4873 7
OBS	2480	00 65	34 71	27 86		4 22	4898 3
STD	2500	00 64	34 71	27 86	0 875	4 26	4899 4
OBS	2980	00 49	34 71	27 87		4 78	4925 5
STD	3000	00 49	34 71	27 87	1 014	4 77	4926 7
OBS	3480	00 46	34 71	27 87		4 53	4954 5

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0054	02	03	1961	01	69° 13′ S	107° 16′ W	4260	40

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
02	27		91	00 3	51 1	75	02	6	5					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 26	32 38	26 06	0 000	7 79	4711 6
OBS	0000	-01 26	32 38	26 06		7 79	4711 6
STD	0010	-01 48	32 60	26 25	0 019	7 78	4709 7
OBS	0010	-01 48	32 60	26 25		7 78	4709 7
STD	0020	-01 52	33 45	26 93	0 033	7 55	4713 4
OBS	0020	-01 52	33 45	26 93		7 55	4713 4
STD	0030	-01 61	33 87	27 28	0 043	7 04	4714 4
OBS	0030	-01 61	33 87	27 28		7 04	4714 4
STD	0050	-01 69	34 05	27 43	0 058	6 65	4715 1
OBS	0050	-01 69	34 05	27 43		6 65	4715 1
STD	0075	-01 57	34 15	27 50	0 073	6 26	4718 9
OBS	0075	-01 57	34 15	27 50		6 26	4718 9
STD	0100	-00 95	34 25	27 56	0 087	5 74	4730 5
OBS	0100	-00 95	34 25	27 56		5 74	4730 5
OBS	0125	-00 05	34 37	27 62		5 18	4746 4
STD	0150	00 68	34 47	27 66	0 111	4 66	4759 4
OBS	0175	01 13	34 54	27 69		4 31	4767 9
STD	0200	01 30	34 59	27 72	0 132	4 13	4772 1
OBS	0200	01 30	34 59	27 72		4 13	4772 1
STD	0250	01 62	34 64	27 73	0 151	3 98	4780 0
OBS	0250	01 62	34 64	27 73		3 98	4780 0
STD	0300	01 66	34 65	27 74	0 170	4 00	4783 6
OBS	0300	01 66	34 65	27 74		4 00	4783 6
STD	0400	01 77	34 70	27 77	0 207	3 94	4791 4
OBS	0400	01 77	34 70	27 77		3 94	4791 4
STD	0500	01 75	34 74	27 80	0 241	4 01	4797 2
OBS	0500	01 75	34 74	27 80		4 01	4797 2
STD	0600	01 69	34 74	27 81	0 273	4 02	4802 3
STD	0800	01 55	34 73	27 81	0 338	4 08	4812 1
OBS	0800	01 55	34 73	27 81		4 08	4812 1
STD	1000	01 40	34 74	27 83	0 402	4 21	4821 8
OBS	1000	01 40	34 74	27 83		4 21	4821 8
STD	1200	01 27	34 73	27 83	0 465	4 26	4831 7
OBS	1200	01 27	34 73	27 83		4 26	4831 7
STD	1500	01 10	34 72	27 84	0 559	4 31	4847 0
OBS	1500	01 10	34 72	27 84		4 31	4847 0
STD	2000	00 84	34 71	27 84	0 712	4 46	4872 7
OBS	2000	00 84	34 71	27 84		4 46	4872 7
STD	2500	00 64	34 74	27 88	0 853	4 46	4899 5
OBS	2500	00 64	34 74	27 88		4 46	4899 5
STD	3000	00 46	34 70	27 86	0 987	4 69	4926 2
OBS	3000	00 46	34 70	27 86		4 69	4926 2
STD	4000	00 36	34 70	27 87	1 255	4 61	4983 6
OBS	4000	00 36	34 70	27 87		4 61	4983 6

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0055	02	03	1961	09	69° 15′S	105° 44′W	4125	40

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
00	00		92	51 4	52 2	82	02	6	7					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O₂ml/l ↓	V_f ↓
STD	0000	-01 04	32 59	26 22	0 000	7 67	4716 0
OBS	0000	-01 04	32 59	26 22		7 67	4716 0
STD	0010	-01 32	32 83	26 43	0 017	7 57	4713 2
OBS	0010	-01 32	32 83	26 43		7 57	4713 2
STD	0020	-01 36	33 72	27 15	0 030	7 95	4717 1
OBS	0020	-01 36	33 72	27 15		7 95	4717 1
STD	0030	-01 57	33 89	27 29	0 038	7 48	4715 1
OBS	0030	-01 57	33 89	27 29		7 48	4715 1
STD	0050	-01 71	34 03	27 41	0 053	6 87	4714 6
OBS	0050	-01 71	34 03	27 41		6 87	4714 6
STD	0075	-01 63	34 11	27 47	0 069	6 65	4717 8
OBS	0075	-01 63	34 11	27 47		6 65	4717 8
STD	0100	-01 02	34 19	27 52	0 084	6 17	4729 2
OBS	0100	-01 02	34 19	27 52		6 17	4729 2
OBS	0125	00 48	34 37	27 59		5 07	4754 4
STD	0150	01 45	34 50	27 63	0 110	4 31	4770 9
OBS	0150	01 45	34 50	27 63		4 31	4770 9
OBS	0175	01 71	34 55	27 66		4 08	4776 5
STD	0200	01 79	34 58	27 67	0 133	3 99	4779 2
OBS	0200	01 79	34 58	27 67		3 99	4779 2
STD	0250	01 87	34 61	27 69	0 154	3 99	4783 5
OBS	0250	01 70*	34 61	27 70*		3 99	4781 0*
OBS	0294	01 91				3 92	
STD	0300	01 91	34 65	27 72	0 175	3 92	4787 2
OBS	0393	01 90	34 70	27 76		3 97	4792 8
STD	0400	01 90	34 70	27 76	0 213	3 98	4793 3
OBS	0492	01 88	34 72	27 78		4 07	4798 5
STD	0500	01 88	34 72	27 78	0 248	4 07	4799 0
OBS	0590	01 82	34 73	27 79		4 13	4803 5
STD	0600	01 81	34 73	27 79	0 283	4 14	4804 0
OBS	0788	01 67	34 75	27 82		4 30	4813 2
STD	0800	01 66	34 75	27 82	0 349	4 30	4813 8
OBS	0986	01 53	34 75	27 83		4 36	4822 9
STD	1000	01 52	34 75	27 83	0 413	4 36	4823 6
OBS	1185	01 38	34 74	27 83		4 40	4832 5
STD	1200	01 37	34 74	27 83	0 476	4 41	4833 2
OBS	1482	01 18	34 73	27 84		4 49	4847 1
STD	1500	01 17				4 49	
OBS	1980	00 91				4 54	
STD	2000	00 90				4 55	
OBS	2479	00 68				4 69	
STD	2500	00 67				4 69	
OBS	2978	00 34				4 74	
STD	3000					4 74	
OBS	3978	00 03*				4 86	

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0056	02	03	1961	18	69° 46′ S	105° 40′ W	3893	37

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ▼	WET ▼			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
04	18		95	52 2	52 8	87	02	0	8					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ▼	S‰ ▼	σ_t ▼	Σ ΔD ▼	O₂ ml/l ▼	V_f ▼
STD	0000	-01 53	32 44	26 12	0 000	7 98	4707 6
OBS	0000	-01 53	32 44	26 12		7 98	4707 6
STD	0010	-01 59	32 86	26 46	0 017	7 93	4709 1
OBS	0010	-01 59	32 86	26 46		7 93	4709 1
STD	0020	-01 74	33 26	26 79	0 032	7 54	4709 0
OBS	0020	-01 74	33 26	26 79		7 54	4709 0
STD	0030	-01 70	33 83	27 25	0 042	6 91	4712 8
OBS	0030	-01 70	33 83	27 25		6 91	4712 8
STD	0050	-01 69	34 09	27 46	0 057	6 53	4715 2
OBS	0050	-01 69	34 09	27 46		6 53	4715 2
STD	0075	-01 50	34 16	27 51	0 072	6 29	4720 0
OBS	0075	-01 50	34 16	27 51		6 29	4720 0
STD	0100	-01 16	34 23	27 56	0 086	6 04	4727 2
OBS	0100	-01 16	34 23	27 56		6 04	4727 2
OBS	0125	-00 26	34 36	27 62		5 42	4743 2
STD	0150	00 45	34 47	27 67	0 110	4 89	4755 9
OBS	0150	00 45	34 47	27 67		4 89	4755 9
OBS	0175	00 92	34 53	27 69		4 56	4764 7
STD	0200	01 30	34 58	27 71	0 131	4 31	4772 0
OBS	0200	01 30	34 58	27 71		4 31	4772 0
STD	0250	01 47	34 63	27 74	0 150	4 19	4777 7
OBS	0250	01 47	34 63	27 74		4 19	4777 7
STD	0300	01 61	34 67	27 76	0 168	4 11	4782 9
OBS	0300	01 61	34 67	27 76		4 11	4782 9
STD	0400	01 73	34 70	27 77	0 204	4 11	4790 8
OBS	0400	01 73	34 70	27 77		4 11	4790 8
STD	0500	01 69	34 73	27 80	0 238	4 15	4796 3
OBS	0500	01 69	34 73	27 80		4 15	4796 3
STD	0600	01 63	34 73	27 81	0 270	4 14	4801 3
OBS	0600	01 63	34 73	27 81		4 14	4801 3
STD	0800	01 47	34 73	27 82	0 335	4 27	4810 9
OBS	0800	01 47	34 73	27 82		4 27	4810 9
STD	1000	01 33	34 73	27 83	0 398	4 40	4820 7
OBS	1000	01 33	34 73	27 83		4 40	4820 7
STD	1200	01 18	34 72	27 83	0 461	4 36	4830 4
OBS	1200	01 18	34 72	27 83		4 36	4830 4
STD	1500	00 99	34 72	27 84	0 553	4 53	4845 4
OBS	1500	00 99	34 72	27 84		4 53	4845 4
STD	2000	00 77	34 71	27 85	0 701	4 53	4871 7
OBS	2000	00 77	34 71	27 85		4 53	4871 7
STD	2500	00 59	34 70	27 85	0 846	4 70	4898 6
OBS	2500	00 59	34 70	27 85		4 70	4898 6
STD	3000	00 44	34 70	27 86	0 985	4 80	4925 9
OBS	3000	00 44	34 70	27 86		4 80	4925 9
OBS	3700	00 37	34 71	27 87		4 85	4966 1

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0057	02	04	1961	04	70° 18′S	105° 36′W	3340	32

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY	WET			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
03	21		99	50 7	51 2	90	02	0	8					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C	S‰	σ_t	$\Sigma \Delta D$	O_2 ml/l	V_f
STD	0000	-01 72	33 15	26 70	0 000	7 41	4707 7
OBS	0000	-01 72	33 15	26 70		7 41	4707 7
STD	0010	-01 77	33 38	26 88	0 013	7 34	4708 5
OBS	0010	-01 77	33 38	26 88		7 34	4708 5
STD	0020	-01 74	33 46	26 95	0 024	7 22	4709 9
OBS	0020	-01 74	33 46	26 95		7 22	4709 9
STD	0030	-01 70	33 54	27 01	0 035	6 89	4711 5
OBS	0030	-01 70	33 54	27 01		6 89	4711 5
STD	0050	-01 72	34 07	27 44	0 052	6 54	4714 7
OBS	0050	-01 72	34 07	27 44		6 54	4714 7
STD	0075	-01 56	34 16	27 51	0 067	6 38	4719 1
OBS	0075	-01 56	34 16	27 51		6 38	4719 1
STD	0100	-01 23	34 22	27 55	0 081	6 07	4726 0
OBS	0100	-01 23	34 22	27 55		6 07	4726 0
OBS	0125	-00 48	34 32	27 60		5 57	4739 6
STD	0150	00 19	34 43	27 66	0 106	5 08	4751 8
OBS	0150	00 19	34 43	27 66		5 08	4751 8
OBS	0175	00 87	34 53	27 70		4 59	4764 0
STD	0200	01 03	34 56	27 71	0 127	4 43	4768 0
OBS	0200	01 03	34 56	27 71		4 43	4768 0
STD	0250	01 42	34 63	27 74	0 146	4 19	4777 0
OBS	0250	01 42	34 63	27 74		4 19	4777 0
STD	0300	01 54	34 66	27 76	0 164	4 12	4781 9
STD	0400	01 67	34 70	27 78	0 200	4 07	4789 9
OBS	0400	01 67	34 70	27 78		4 07	4789 9
STD	0500	01 65	34 69	27 77	0 235	4 13	4795 5
OBS	0500	01 65	34 69	27 77		4 13	4795 5
STD	0600	01 59	34 71	27 79	0 269	4 15	4800 7
OBS	0600	01 59	34 71	27 79		4 15	4800 7
STD	0800	01 41	34 71	27 81	0 336	4 29	4809 9
OBS	0800	01 41	34 71	27 81		4 29	4809 9
STD	1000	01 26	34 74	27 84	0 399	4 35	4819 7
OBS	1000	01 26	34 74	27 84		4 35	4819 7
STD	1200	01 13	34 72	27 83	0 460	4 38	4829 6
OBS	1200	01 13	34 72	27 83		4 38	4829 6
STD	1500	00 93	34 72	27 85	0 550	4 54	4844 5
OBS	1500	00 93	34 67*	27 81*		4 54	4844 2*
STD	2000	00 71	34 71	27 85	0 695	4 58	4870 8
OBS	2000	00 71	34 71	27 85		4 58	4870 8
STD	2500	00 47	34 72	27 87	0 831	4 84	4896 9
OBS	2500	00 47	34 72	27 87		4 84	4896 9
STD	3000	00 42	34 68	27 85	0 966	4 83	4925 5
OBS	3000	00 42	34 68	27 85		4 83	4925 5
OBS	3200	00 41	34 69	27 85		4 76	4937 2

SURFACE OBSERVATIONS									
NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DA.	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0058	02	04	1961	15	70° 18′S	107° 00′W	3805	35

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
03	18		02	52 9	53 3	80	02	6	8					8		

SUBSURFACE OBSERVATIONS																	
	SAMPLE DEPTH (M)	T °C ↓		S‰ ↓		σ_t ↓		ΣΔD ↓		O_2 ml/l ↓		V_f ↓					
STD	0000	-01	35	32	73	26	35	0	000	7	85	4711	7				
OBS	0000	-01	35	32	73	26	35			7	85	4711	7				
STD	0010	-01	54	33	25	26	77	0	015	7	78	4711	6				
OBS	0010	-01	54	33	25	26	77			7	78	4711	6				
STD	0020	-01	68	33	70	27	14	0	026	7	18	4711	9				
OBS	0020	-01	68	33	70	27	14			7	18	4711	9				
STD	0030	-01	62	33	94	27	33	0	034	7	12	4714	5				
OBS	0030	-01	62	33	94	27	33			7	12	4714	5				
STD	0050	-01	68	34	09	27	46	0	048	6	64	4715	4				
OBS	0050	-01	68	34	09	27	46			6	64	4715	4				
STD	0075	-01	42	34	19	27	53	0	063	6	34	4721	4				
OBS	0075	-01	42	34	19	27	53			6	34	4721	4				
STD	0100	-00	72	34	30	27	60	0	076	5	77	4734	3				
OBS	0100	-00	72	34	30	27	60			5	77	4734	3				
OBS	0125	-00	06	34	41	27	65			5	30	4746	4				
STD	0150	00	65	34	41	27	61	0	101	4	79	4758	7				
OBS	0150	00	65	34	41	27	61			4	79	4758	7				
OBS	0175	00	90	34	54	27	70			4	59	4764	4				
STD	0200	01	21	34	59	27	72	0	123	4	37	4770	8				
OBS	0200	01	21	34	59	27	72			4	37	4770	8				
STD	0250	01	48	34	64	27	74	0	142	4	21	4777	9				
OBS	0250	01	48	34	64	27	74			4	21	4777	9				
STD	0300	01	69	34	70	27	78	0	159	4	10	4784	2				
OBS	0300	01	69	34	70	27	78			4	10	4784	2				
STD	0400	01	68	34	71	27	79	0	193	4	17	4790	1				
OBS	0400	01	59*	34	68*	27	77*			4	12	4788	6*				
STD	0500	01	68	34	71	27	79	0	227	4	20	4796	0				
OBS	0500	01	68	34	71	27	79			4	20	4796	0				
STD	0600	01	63	34	70	27	78	0	262	4	20	4801	2				
OBS	0600	01	63	34	70	27	78			4	20	4801	2				
STD	0800	01	47	34	74	27	83	0	328	4	33	4810	9				
OBS	0800	01	47	34	74	27	83			4	33	4810	9				
STD	1000	01	34	34	76	27	85	0	388	4	38	4821	0				
OBS	1000	01	34	34	76	27	85			4	38	4821	0				
STD	1200	01	21	34	73	27	84	0	448	4	44	4830	8				
OBS	1200	01	21	34	73	27	84			4	44	4830	8				
STD	1500	00	99	34	73	27	85	0	538	4	52	4845	4				
OBS	1500	00	99	34	73	27	85			4	52	4845	4				
STD	2000	00	79	34	70	27	84	0	687	4	58	4872	0				
OBS	2000	00	79	34	70	27	84			4	58	4872	0				
STD	2500	00	55	34	70	27	85	0	833	4	75	4898	0				
OBS	2500	00	55							4	75						
STD	3000	00	42	34	70	27	86	0	971	4	83	4925	6				
OBS	3000	00	42							4	83						
OBS	3500	00	38	34	70	27	86			4	71	4954	5				

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0059	02	05	1961	01	69° 49′ S	106° 59′ W	4080	39

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
03	11		02	51 7	52 1	91	02	0	8					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 24	32 47	26 13	0 000	7 97	4712 3
OBS	0000	-01 24	32 47	26 13		7 97	4712 3
STD	0010	-01 60	33 31	26 82	0 016	7 46	4710 9
OBS	0010	-01 60	33 31	26 82		7 46	4710 9
STD	0020	-01 69	33 48	26 96	0 027	7 29	4710 8
OBS	0020	-01 69	33 48	26 96		7 29	4710 8
STD	0030	-01 67	33 80	27 22	0 037	7 04	4713 1
OBS	0030	-01 67	33 80	27 22		7 04	4713 1
STD	0050	-01 66	34 05	27 42	0 052	6 82	4715 5
OBS	0050	-01 66	34 05	27 42		6 82	4715 5
STD	0075	-01 25	34 18	27 52	0 068	6 23	4724 0
OBS	0075	-01 25	34 18	27 52		6 23	4724 0
STD	0100	-00 60	34 29	27 58	0 081	5 70	4736 1
OBS	0100	-00 60	34 29	27 58		5 70	4736 1
OBS	0125	00 36	34 40	27 62		5 00	4752 8
STD	0150	00 83	34 49	27 67	0 105	4 60	4761 7
OBS	0150	00 83	34 49	27 67		4 60	4761 7
OBS	0175	01 27	34 55	27 69		4 36	4770 0
STD	0200	01 36	34 57	27 70	0 126	4 26	4772 9
OBS	0200	01 36	34 57	27 70		4 26	4772 9
STD	0250	01 63	34 63	27 73	0 146	4 12	4780 1
OBS	0250	01 63	34 63	27 73		4 12	4780 1
OBS	0297	01 73	34 66	27 74		4 11	4784 5
STD	0300	01 73	34 66	27 74	0 165	4 11	4784 7
OBS	0396	01 80	34 69	27 76		4 08	4791 5
STD	0400	01 80	34 69	27 76	0 202	4 09	4791 8
OBS	0495	01 73	34 71	27 78		4 20	4796 5
STD	0500	01 73	34 71	27 78	0 238	4 20	4796 8
OBS	0595	01 71	34 72	27 79		4 16	4802 2
STD	0600	01 71	34 72	27 79	0 272	4 16	4802 5
OBS	0793	01 56	34 72	27 80		4 30	4811 8
STD	0800	01 56	34 72	27 80	0 340	4 30	4812 2
OBS	0992	01 43	34 72	27 81		4 36	4821 7
STD	1000	01 43	34 72	27 81	0 406	4 36	4822 1
OBS	1191	01 31	34 72	27 82		4 35	4831 7
STD	1200	01 30	34 72	27 82	0 471	4 36	4832 1
OBS	1489	01 11	34 72	27 83		4 51	4846 5
STD	1500	01 10	34 72	27 84	0 567	4 51	4847 0
OBS	1987	00 85	34 70	27 84		4 54	4872 1
STD	2000	00 84	34 70	27 84	0 722	4 54	4872 7
OBS	2483	00 63	34 70	27 85		4 67	4898 2
STD	2500	00 62	34 70	27 85	0 871	4 67	4899 0
OBS	2986	00 45	34 69	27 85		4 76	4925 2
STD	3000	00 45	34 69	27 85	1 013	4 76	4926 0
OBS	3886	00 33	34 69	27 86		4 84	4976 4

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0060	02	05	1961	07	69° 33′ S	106° 58′ W	4188	40

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
02	05		02	52 5	52 8	91	02	0	8					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 55	32 54	26 20	0 000	7 87	4707 7
OBS	0000	-01 55	32 54	26 20		7 87	4707 7
STD	0010	-01 49	32 96	26 54	0 017	7 96	4711 1
OBS	0010	-01 49	32 96	26 54		7 96	4711 1
STD	0020	-01 60	33 10	26 65	0 031	7 92	4710 6
OBS	0020	-01 60	33 10	26 65		7 92	4710 6
STD	0030	-01 43	33 75	27 17	0 043	6 97	4716 7
OBS	0030	-01 43	33 75	27 17		6 97	4716 7
STD	0050	-01 67	34 05	27 42	0 058	6 19	4715 4
OBS	0050	-01 67	34 05	27 42		6 19	4715 4
STD	0075	-00 95	34 22	27 54	0 073	5 87	4728 9
OBS	0075	-00 95	34 22	27 54			4728 9
STD	0100	-00 03	34 33	27 59	0 087	5 49	4745 1
OBS	0100	-00 03	34 33	27 59		5 49	4745 1
OBS	0125	00 45	34 41	27 63		5 05	4754 2
STD	0150	00 98	34 49	27 66	0 111	4 64	4763 9
OBS	0150	00 98	34 49	27 66		4 64	4763 9
OBS	0175	01 43	34 55	27 68		4 31	4772 3
STD	0200	01 59	34 58	27 69	0 132	4 17	4776 3
OBS	0200	01 59	34 58	27 69		4 17	4776 3
STD	0250	01 81	34 64	27 72	0 153	4 05	4782 8
OBS	0250	01 81	34 64	27 72		4 05	4782 8
STD	0300	01 81	34 65	27 73	0 172	4 06	4785 8
OBS	0300	01 75*	34 62*	27 71*		4 09	4784 8*
STD	0400	01 81	34 66	27 74	0 211	4 07	4791 8
OBS	0400	01 81	34 66	27 74		4 07	4791 8
STD	0500	01 80	34 69	27 76	0 249	4 14	4797 7
OBS	0500	01 80	34 69	27 76		4 14	4797 7
STD	0600	01 78	34 73	27 79	0 284	4 17	4803 5
OBS	0600	01 78	34 73	27 79		4 17	4803 5
STD	0800	01 64	34 75	27 82	0 350	4 31	4813 5
OBS	0800	01 64	34 75	27 82		4 31	4813 5
STD	1000	01 50	34 74	27 82	0 414	4 35	4823 3
OBS	1000	01 50	34 74	27 82		4 35	4823 3
STD	1200	01 35	34 74	27 83	0 478	4 35	4832 9
OBS	1200	01 35	34 74	27 83		4 35	4832 9
STD	1500	01 15	34 74	27 85	0 570	4 49	4847 8
OBS	1500	01 15	34 74	27 85		4 49	4847 8
STD	2000	00 89	34 71	27 84	0 722	4 58	4873 5
OBS	2000	00 89	34 71	27 84		4 58	4873 5
STD	2500	00 66	34 71	27 86	0 870	4 70	4899 7
OBS	2500	00 66	34 71	27 86		4 70	4899 7
STD	3000	00 49	34 69	27 85	1 013	4 81	4926 6
OBS	3000	00 49	34 69	27 85		4 81	4926 6
STD	4000	00 33	34 70	27 87	1 285	4 89	4983 1
OBS	4000	00 33	34 70	27 87		4 89	4983 1

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0061	02	05	1961	15	69° 26′S	105° 43′W	3725	35

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
04	11		02	52 1	52 5	90	02	6	8					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 49	32 40	26 08	0 000	7 87	4708 1
OBS	0000	-01 49	32 40	26 08		7 87	4708 1
STD	0010	-01 58	33 06	26 62	0 017	7 85	4710 1
OBS	0010	-01 58	33 06	26 62		7 85	4710 1
STD	0020	-01 50	33 46	26 94	0 030	7 74	4713 7
OBS	0020	-01 50	33 46	26 94		7 74	4713 7
STD	0030	-01 58	33 92	27 32	0 039	7 25	4715 0
OBS	0030	-01 58	33 92	27 32		7 25	4715 0
STD	0050	-01 70	34 07	27 44	0 053	6 77	4715 0
OBS	0050	-01 70	34 07	27 44		6 77	4715 0
STD	0075	-01 68	34 11	27 47	0 069	6 65	4717 0
OBS	0075	-01 68	34 11	27 47		6 65	4717 0
STD	0100	-01 13	34 22	27 55	0 083	6 06	4727 6
OBS	0100	-01 13	34 22	27 55		6 06	4727 6
OBS	0125	-00 05	34 36	27 61		5 31	4746 4
STD	0150	01 10	34 57	27 71	0 107	4 50	4766 1
OBS	0150	01 10	34 57	27 71		4 50	4766 1
OBS	0175	01 54	34 60	27 71		4 24	4774 2
STD	0200	01 65	34 60	27 70	0 127	4 16	4777 3
OBS	0200	01 65	34 60	27 70		4 16	4777 3
STD	0250	01 78	34 63	27 71	0 147	4 06	4782 3
OBS	0250	01 78	34 63	27 71		4 06	4782 3
STD	0300	01 81	34 65	27 73	0 167	4 07	4785 8
OBS	0300	01 81					
STD	0400	01 84	34 68	27 75	0 205	4 11	4792 3
OBS	0400	01 84	34 68	27 75		4 11	4792 3
STD	0500	01 80	34 68	27 75	0 242	4 16	4797 7
OBS	0500	01 80	34 68	27 75		4 16	4797 7
STD	0600	01 73	34 72	27 79	0 278	4 13	4802 8
OBS	0600	01 73	34 72	27 79		4 13	4802 8
STD	0800	01 54	34 74	27 82	0 344	4 28	4812 0
OBS	0800	01 54	34 74	27 82		4 28	4812 0
STD	1000	01 41	34 73	27 82	0 408	4 39	4821 9
OBS	1000	01 41	34 73	27 82		4 39	4821 9
STD	1200	01 27	34 73	27 83	0 472	4 35	4831 7
OBS	1200	01 27	34 70*	27 81*		4 35	4831 6*
STD	1500	01 06	34 72	27 84	0 565	4 59	4846 4
OBS	1500	01 06	34 72	27 84		4 59	4846 4
STD	2000	00 80	34 71	27 85	0 716	4 50	4872 1
OBS	2000	00 80	34 71	27 85		4 50	4872 1
STD	2500	00 62	34 71	27 86	0 860	4 75	4899 1
OBS	2500	00 62	34 71	27 86		4 75	4899 1
STD	3000	00 45	34 72	27 88	0 995	4 81	4926 1
OBS	3000	00 45	34 72	27 88		4 81	4926 1
OBS	3500	00 37	34 68	27 85		4 88	4954 2

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0062	02	07	1961	15	71° 45′S	095° 57′W	0404	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY	WET			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
04	16		17	55 0	55 6	82	02	6	5					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C	S‰	σ_t	$\Sigma \Delta D$	O_2 ml/l	V_f
STD	0000	-01 61	33 30	26 82	0 000	7 54	4710 1
OBS	0000	-01 61	33 30	26 82		7 54	4710 1
STD	0010	-01 70	33 31	26 83	0 012	7 50	4709 3
OBS	0010	-01 70	33 31	26 83		7 50	4709 3
STD	0020	-01 71	33 43	26 92	0 024	7 42	4710 3
OBS	0020	-01 71	33 43	26 92		7 42	4710 3
STD	0030	-01 53	33 69	27 13	0 035	7 11	4714 8
OBS	0030	-01 53	33 69	27 13		7 11	4714 8
STD	0050	-01 53	33 88	27 28	0 052	6 37	4716 8
OBS	0050	-01 53	33 88	27 28		6 37	4716 8
STD	0075	-01 52	33 99	27 37	0 071	6 16	4719 0
OBS	0075	-01 52	33 99	27 37		6 16	4719 0
STD	0100	-01 46	34 06	27 43	0 088	5 93	4721 7
OBS	0100	-01 46	34 06	27 43		5 93	4721 7
OBS	0125	-01 30	34 13	27 48		5 83	4726 0
STD	0150	-01 08	34 22	27 54	0 118	5 68	4731 3
OBS	0150	-01 08	34 22	27 54		5 68	4731 3
OBS	0175	-01 08	34 25	27 57		5 85	4733 0
STD	0200	-01 04	34 28	27 59	0 144	5 81	4735 2
OBS	0200	-01 04	34 28	27 59		5 81	4735 2
OBS	0225	-00 84	34 32	27 62		5 64	4740 0
STD	0250	-00 64	34 35	27 63	0 168	5 50	4744 7
OBS	0250	-00 64				5 50	
OBS	0275	-00 35	34 40	27 66		5 39	4750 9
STD	0300	-00 02	34 46	27 69	0 190	5 12	4757 7
OBS	0300	-00 02	34 46	27 69		5 12	4757 7
OBS	0325	00 18	34 51	27 72		4 95	4762 4
OBS	0350	00 49	34 57	27 75		4 80	4768 8
OBS	0375	00 65	34 59	27 76		4 69	4772 8
OBS	0390	00 81	34 61	27 77		4 37	4776 2

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0063	02	09	1961	05	72° 32′ S	093° 02′ W	0386	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
06	09		95	56 8	57 4	81	02		0					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 53	33 44	26 93	0 000	7 77	4712 0
OBS	0000	-01 53	33 44	26 93		7 77	4712 0
STD	0010	-01 40	33 43	26 91	0 011	7 82	4714 6
OBS	0010	-01 40	33 43	26 91		7 82	4714 6
STD	0020	-01 37	33 51	26 98	0 023	7 76	4716 0
OBS	0020	-01 37	33 51	26 98		7 76	4716 0
STD	0030	-01 47	33 72	27 15	0 033	7 21	4715 9
OBS	0030	-01 47	33 72	27 15		7 21	4715 9
STD	0050	-01 50	34 05	27 42	0 048	6 08	4718 1
OBS	0050	-01 50	34 05	27 42		6 08	4718 1
STD	0075	-01 44	34 12	27 47	0 064	5 97	4720 8
OBS	0075	-01 44	34 12	27 47		5 97	4720 8
STD	0100	-01 40	34 15	27 50	0 079	5 86	4723 0
OBS	0100	-01 40	34 15	27 50		5 86	4723 0
OBS	0125	-01 39	34 16	27 51		5 93	4724 7
STD	0150	-01 35	34 18	27 52	0 108	5 91	4726 9
OBS	0150	-01 35	34 18	27 52		5 91	4726 9
OBS	0175	-01 23	34 21	27 54		5 88	4730 4
STD	0200	-01 14	34 24	27 56	0 136	5 81	4733 5
OBS	0200	-01 14	34 24	27 56		5 81	4733 5
OBS	0225	-00 89	34 30	27 60		5 69	4739 1
OBS	0246	-00 71	34 35	27 64		5 61	4743 4
STD	0250	-00 69	34 36	27 64	0 160	5 56	4744 0
OBS	0270	-00 57	34 39	27 66		5 40	4747 1
OBS	0295	-00 39	34 42	27 68		5 37	4751 5
STD	0300	-00 31	34 43	27 68	0 182	5 31	4753 1
OBS	0320	-00 03	34 48	27 71		5 11	4758 8
OBS	0344	00 21	34 53	27 74		4 96	4764 1
OBS	0369	00 46	34 57	27 75		4 81	4769 5

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0064	02	10	1961	02	72° 29′ S	091° 43′ W	0160	01

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR	AMT.	DIR	AMT.		COL.	TRANS.
08	09		95	53 9	56 1	84	02		0					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O₂ml/l ↓	V_f ↓
STD	0000	-01 22	33 31	26 81	0 000	9 17	4716 3
OBS	0000	-01 22	33 31	26 81		9 17	4716 3
STD	0010	-01 00	33 34	26 83	0 012	9 21	4720 5
OBS	0010	-01 00	33 34	26 83		9 21	4720 5
STD	0020	-01 08	33 60	27 04	0 024	8 41	4720 9
OBS	0020	-01 08	33 60	27 04		8 41	4720 9
STD	0030	-01 26	33 81	27 22	0 033	7 57	4719 6
OBS	0030	-01 23*	33 81	27 22*		7 57	4720 1*
STD	0050	-01 48	34 01	27 39	0 049	6 50	4718 2
OBS	0050	-01 48	34 01	27 39		6 50	4718 2
STD	0075	-01 50	34 10	27 46	0 065	6 25	4719 8
OBS	0075	-01 50	34 10	27 46		6 25	4719 8
STD	0100	-01 43	34 15	27 50	0 080	6 06	4722 6
OBS	0100	-01 43	34 15	27 50		6 06	4722 6
OBS	0125	-01 33	34 18	27 52		5 95	4725 8
STD	0150	-01 23	34 23	27 56	0 108	5 89	4729 0
OBS	0150	-01 23	34 23	27 56		5 89	4729 0

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0065	02	10	1961	18	72° 27'S	092° 14'W	0424	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
09	09		94	54 5	55 0	84	02		0					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 37	33 17	26 70	0 000	8 90	4713 3
OBS	0000	-01 37	33 17	26 70		8 90	4713 3
STD	0010	-01 41	33 17	26 70	0 013	8 94	4713 3
OBS	0010	-01 41	33 17	26 70		8 94	4713 3
STD	0020	-01 39	33 21	26 74	0 027	8 91	4714 4
OBS	0020	-01 39	33 21	26 74		8 91	4714 4
STD	0030	-01 33	33 47	26 95	0 039	8 51	4717 0
OBS	0030		33 47			8 51	
STD	0050	-01 32	33 84	27 24	0 058	7 20	4720 0
OBS	0050	-01 32	33 84	27 24		7 20	4720 0
STD	0075	-01 54	34 02	27 40	0 077	6 15	4718 8
OBS	0075	-01 54	34 02	27 40		6 15	4718 8
STD	0100	-01 60	34 08	27 45	0 094	6 05	4719 6
OBS	0100	-01 60	34 08	27 45		6 05	4719 6
OBS	0125	-01 53	34 11	27 47		6 01	4722 3
STD	0150	-01 47	34 15	27 50	0 124	5 93	4724 9
OBS	0150	-01 47	34 15	27 50		5 93	4724 9
OBS	0175	-01 33	34 18	27 52		5 88	4728 7
STD	0200	-01 19	34 25	27 57	0 152	5 78	4732 7
OBS	0200	-01 19	34 25	27 57		5 78	4732 7
OBS	0225	-00 86	34 31	27 61		5 59	4739 6
STD	0250	-00 78	34 34	27 63	0 176	5 52	4742 5
OBS	0250	-00 78	34 34	27 63		5 52	4742 5
OBS	0275	-00 57	34 38	27 65		5 28	4747 4
STD	0300	-00 32	34 43	27 68	0 198	5 24	4752 9
OBS	0300	-00 32	34 43	27 68		5 24	4752 9
OBS	0325	-00 01	34 48	27 71		4 98	4759 4
OBS	0350	00 26	34 54	27 74		4 59	4765 2
OBS	0375	00 53					
STD	0400	00 80	34 64	27 79	0 235	4 04	4776 8
OBS	0400	00 80	34 64	27 79		4 04	4776 8

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0066	02	11	1961	02	72° 24′ S	092° 54′ W	0725	07

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
09	09		94	54 9	55 7	76	02	6	1					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 49	33 13	26 67	0 000	9 15	4711 3
OBS	0000	-01 49	33 13	26 67		9 15	4711 3
STD	0010	-01 54	33 13	26 68	0 014	9 16	4711 1
OBS	0010	-01 54	33 13	26 68		9 16	4711 1
STD	0020	-01 49	33 19	26 72	0 027	9 07	4712 7
OBS	0020	-01 49	33 19	26 72		9 07	4712 7
STD	0030	-01 55	33 70	27 14	0 039	7 18	4714 6
OBS	0030	-01 55	33 70	27 14		7 18	4714 6
STD	0050	-01 45	33 91	27 31	0 056	6 54	4718 2
OBS	0050	-01 45	33 91	27 31		6 54	4718 2
STD	0075	-01 56	34 01	27 39	0 074	6 31	4718 4
STD	0100	-01 61	34 08	27 45	0 091	6 17	4719 4
OBS	0100	-01 61	34 08	27 45		6 17	4719 4
STD	0150	-01 54	34 15	27 50	0 121	6 16	4723 8
OBS	0150	-01 54	34 15	27 50		6 16	4723 8
STD	0200	-01 18	34 24	27 56	0 149	5 79	4732 8
OBS	0200	-01 18	34 24	27 56		5 79	4732 8
STD	0250	-00 84	34 32	27 62	0 174	5 67	4741 5
OBS	0250	-00 84	34 32	27 62		5 67	4741 5
STD	0300	-00 34	34 41	27 67	0 196	5 26	4752 6
OBS	0300	-00 34	34 41	27 67		5 26	4752 6
OBS	0350	00 16	34 50	27 72		4 93	4763 5
STD	0400	00 46	34 57	27 75	0 235	4 72	4771 4
OBS	0400	00 46	34 57	27 75		4 72	4771 4
OBS	0450	00 70	34 62	27 78		4 60	4778 2
STD	0500	00 87	34 66	27 80	0 269	4 48	4783 9
OBS	0500	00 87	34 66	27 80		4 48	4783 9
STD	0600	01 05	34 70	27 82	0 300	4 38	4792 7
OBS	0600	01 05	34 70	27 82		4 38	4792 7
OBS	0700	01 09	34 70	27 82		4 32	4799 2

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0067	02	11	1961	19	72° 14′ S	092° 45′ W	0410	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	09		98	53 9	55 0	72	02	4	3					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 47	33 12	26 67	0 000	9 11	4711 5
OBS	0000	-01 47	33 12	26 67		9 11	4711 5
STD	0010	-01 55	33 12	26 67	0 014	9 10	4710 9
OBS	0010	-01 55	33 12	26 67		9 10	4710 9
STD	0020	-01 37	33 48	26 95	0 026	8 81	4715 9
OBS	0020	-00 98*	33 48	26 94*		8 81	4722 0*
STD	0030	-01 28	33 72	27 15	0 036	7 59	4718 9
OBS	0030	-01 28	33 72	27 15		7 59	4718 9
STD	0050	-01 39	33 87	27 27	0 054	6 94	4719 0
OBS	0050	-01 39	33 87	27 27		6 94	4719 0
STD	0075	-01 58	34 04	27 41	0 072	6 25	4718 2
OBS	0075	-01 58	34 04	27 41		6 25	4718 2
STD	0100	-01 64	34 08	27 45	0 089	6 12	4719 0
OBS	0100	-01 64	34 08	27 45		6 12	4719 0
OBS	0125	-01 52	34 12	27 48		6 02	4722 5
STD	0150	-01 47	34 16	27 51	0 119	6 03	4725 0
OBS	0150	-01 47	34 16	27 51		6 03	4725 0
OBS	0175	-01 36	34 18	27 52		5 98	4728 3
STD	0200	-01 05	34 26	27 58	0 146	5 72	4735 0
OBS	0200	-01 05	34 26	27 58		5 72	4735 0
OBS	0225	-00 89	34 31	27 61		5 65	4739 2
STD	0250	-00 94	34 32	27 62	0 171	5 67	4739 9
OBS	0250	-00 94	34 32	27 62		5 67	4739 9
OBS	0275	-00 71	34 36	27 64		5 49	4745 1
STD	0300	-00 55	34 39	27 66	0 193	5 37	4749 2
OBS	0300	-00 55	34 39	27 66		5 37	4749 2
OBS	0325	-00 31	34 44	27 69		5 23	4754 6
OBS	0350	-00 02	34 50	27 72		5 10	4760 8
OBS	0375	00 35	34 55	27 74		4 80	4768 1
STD	0400	00 55	34 59	27 77	0 232	4 54	4772 8
OBS	0400	00 55	34 59	27 77		4 54	4772 8

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0068	02	11	1961	24	72° 17′ S	091° 26′ W	0335	03

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
03	11		96	53 3	54 4	73	02		0					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 53	33 20	26 73	0 000	9 02	4710 9
OBS	0000	-01 53	33 20	26 73		9 02	4710 9
STD	0010	-01 56	33 22	26 75	0 013	8 94	4711 1
OBS	0010	-01 56	33 22	26 75		8 94	4711 1
STD	0020	-01 28	33 38	26 87	0 026	8 84	4716 8
OBS	0020	-01 28	33 38	26 87		8 84	4716 8
STD	0030	-01 00	33 61	27 05	0 037	8 50	4722 8
OBS	0030	-01 00	33 61	27 05		8 50	4722 8
STD	0050	-01 38	33 89	27 29	0 055	6 82	4719 3
OBS	0050	-01 38	33 89	27 29		6 82	4719 3
STD	0075	-01 52	34 04	27 41	0 073	6 17	4719 2
OBS	0075	-01 52	34 04	27 41		6 17	4719 2
STD	0100	-01 57	34 08	27 45	0 089	6 04	4720 1
OBS	0100	-01 57	34 08	27 45		6 04	4720 1
OBS	0125	-01 48	34 13	27 48		5 99	4723 2
STD	0150	-01 35	34 18	27 52	0 119	5 90	4726 9
OBS	0150	-01 35	34 18	27 52		5 90	4726 9
OBS	0175	-01 21	34 22	27 55		5 79	4730 8
STD	0200	-01 04	34 27	27 58	0 146	5 71	4735 2
OBS	0200	-01 04	34 27	27 58		5 71	4735 2
OBS	0225	-00 96	34 29	27 60		5 69	4738 0
STD	0250	-00 87	34 31	27 61	0 171	5 64	4741 0
OBS	0250	-00 87	34 31	27 61		5 64	4741 0
OBS	0275	-00 71	34 36	27 64		5 50	4745 1
STD	0300	-00 69	34 38	27 66	0 194	5 51	4747 0
OBS	0300	-00 69	34 38	27 66		5 51	4747 0
OBS	0325	-01 03*	34 40	27 69*			4743 3*

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0069	02	12	1961	03	72° 13′ S	092° 04′ W	0430	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
02	09		96	56 2	56 8	89	02	6	1					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O₂ ml/l ↓	V_f ↓
STD	0000	-01 38	33 12	26 66	0 000	9 03	4712 9
OBS	0000	-01 38	33 12	26 66		9 03	4712 9
STD	0010	-01 48	33 12	26 67	0 014	9 06	4712 0
OBS	0010	-01 48	33 12	26 67		9 06	4712 0
STD	0020	-01 05	33 61	27 05	0 026	8 16	4721 4
OBS	0020	-01 05	33 61	27 05		8 16	4721 4
STD	0030	-01 18	33 64	27 08	0 036	7 96	4720 1
OBS	0030	-01 18	33 64	27 08		7 96	4720 1
STD	0050	-01 44	33 87	27 27	0 054	6 80	4718 2
OBS	0050	-01 44	33 87	27 27		6 80	4718 2
STD	0075	-01 51	34 00	27 38	0 073	6 22	4719 2
OBS	0075	-01 51	34 00	27 38		6 22	4719 2
STD	0100	-01 61	34 07	27 44	0 090	5 99	4719 4
OBS	0100	-01 61	34 07	27 44		5 99	4719 4
OBS	0125	-01 48	34 11	27 47		5 97	4723 1
STD	0150	-01 41	34 17	27 51	0 120	5 90	4725 9
OBS	0150	-01 41	34 17	27 51		5 90	4725 9
OBS	0175	-01 30	34 19	27 53		5 88	4729 3
STD	0200	-00 98	34 25	27 56	0 147	5 68	4736 0
OBS	0200	-00 98	34 25	27 56		5 68	4736 0
OBS	0225	-00 86	34 31	27 61		5 58	4739 6
STD	0250	-00 49	34 39	27 66	0 171	5 38	4747 2
OBS	0250	-00 49	34 39	27 66		5 38	4747 2
STD	0300	-00 27	34 43	27 68	0 193	5 24	4753 7
OBS	0300	-00 27	34 43	27 68		5 24	4753 7
OBS	0325	-00 13	34 46	27 70		5 13	4757 5
OBS	0350	00 24	34 52	27 73		4 87	4764 9
OBS	0375	00 47	34 57	27 75		4 71	4770 0
STD	0400	00 57	34 60	27 77	0 230	4 66	4773 2
OBS	0400	00 57	34 60	27 77		4 66	4773 2
OBS	0425	00 69	34 61	27 77		4 35	4776 5

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0070	02	17	1961	01	72° 41′S	091° 55′W	0515	05

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	27		90	53 9	54 4	84	02	4	5					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O₂ml/l ↓	V_f ↓
STD	0000	-01 55	33 48	26 96	0 000	7 86	4711 8
OBS	0000	-01 55	33 48	26 96		7 86	4711 8
STD	0010	-01 53	33 56	27 02	0 011	7 78	4713 1
OBS	0010	-01 53	33 56	27 02		7 78	4713 1
STD	0020	-01 54	33 59	27 05	0 021	7 72	4713 7
OBS	0020	-01 54	33 59	27 05		7 72	4713 7
STD	0030	-01 58	33 61	27 07	0 031	7 96	4713 7
OBS	0030	-01 58	33 61	27 07		7 96	4713 7
STD	0050	-01 63	33 65	27 10	0 051	7 58	4714 3
OBS	0050	-01 63	33 65	27 10		7 58	4714 3
STD	0075	-01 56	33 94	27 33	0 072	6 61	4718 1
OBS	0075	-01 56	33 94	27 33		6 61	4718 1
STD	0100	-01 51	34 04	27 41	0 090	6 23	4720 8
OBS	0100	-01 51	34 04	27 41		6 23	4720 8
OBS	0125	-01 33	34 18	27 52		5 88	4725 8
STD	0150	-01 20	34 23	27 56	0 120	5 82	4729 5
OBS	0150	-01 20	34 23	27 56		5 82	4729 5
OBS	0175	-01 04	34 27	27 58		5 69	4733 7
STD	0200	-01 04	34 29	27 60	0 146	5 73	4735 2
OBS	0200	-01 04	34 29	27 60		5 73	4735 2
OBS	0225	-00 96	34 33	27 63		5 66	4738 2
STD	0250	-00 82	34 36	27 65	0 169	5 62	4741 9
OBS	0250	-00 82	34 36	27 65		5 62	4741 9
STD	0300	-00 45	34 43	27 69	0 190	5 36	4750 9
OBS	0300	-00 45	34 43	27 69		5 36	4750 9
OBS	0350	00 38	34 56	27 75		4 79	4767 1
STD	0400	00 76	34 63	27 78	0 227	4 50	4776 1
OBS	0400	00 76	34 63	27 78		4 50	4776 1
OBS	0450	00 96	34 68	27 81		4 38	4782 3
STD	0500	00 99	34 67	27 80	0 260	4 34	4785 7
OBS	0500	00 99	34 67	27 80		4 34	4785 7

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0071	02	22	1961	01	71° 45′S	092° 54′W	0410	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
04	02		98	52 7	53 1	88	70	0	5					7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma\Delta D$ ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 77	33 71	27 15	0 000	7 36	4709 3
OBS	0000	-01 77	33 71	27 15		7 36	4709 3
STD	0010	-01 84	33 70	27 14	0 009	7 35	4708 8
OBS	0010	-01 84	33 70	27 14		7 35	4708 8
STD	0020	-01 83	33 70	27 14	0 019	7 29	4709 5
OBS	0020	-01 83	33 70	27 14		7 29	4709 5
STD	0030	-01 84	33 72	27 16	0 028	7 38	4710 1
OBS	0030	-01 84	33 72	27 16		7 38	4710 1
STD	0050	-01 77	33 86	27 27	0 045	6 74	4713 0
OBS	0050	-01 77	33 86	27 27		6 74	4713 0
STD	0075	-01 70	33 99	27 38	0 064	6 46	4716 1
OBS	0075	-01 70	33 99	27 38		6 46	4716 1
STD	0100	-01 68	34 07	27 44	0 081	6 24	4718 3
OBS	0100	-01 68	34 07	27 44		6 24	4718 3
OBS	0125	-01 48	34 16	27 51		6 09	4723 3
STD	0150	-01 36	34 21	27 55	0 110	6 00	4726 9
OBS	0150	-01 36	34 21	27 55		6 00	4726 9
OBS	0175	-01 26	34 25	27 57		6 01	4730 1
STD	0200	-01 20	34 27	27 59	0 136	5 92	4732 7
OBS	0200	-01 20	34 27	27 59		5 92	4732 7
OBS	0225	-01 09	34 30	27 61		5 84	4736 0
STD	0250	-00 96	34 33	27 63	0 160	5 77	4739 6
OBS	0250	-00 96	34 33	27 63		5 77	4739 6
OBS	0275	-00 74	34 37	27 65		5 64	4744 7
STD	0300	-00 41	34 42	27 68	0 182	5 41	4751 5
OBS	0300	-00 41	34 42	27 68		5 41	4751 5
OBS	0325	-00 08	34 47	27 70		5 12	4758 3
OBS	0350	00 26	34 53	27 73		4 87	4765 2
OBS	0375	00 70	34 59	27 76		4 63	4773 6
OBS	0395	00 71	34 61	27 77			4775 0

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0072	02	28	1961	01	71° 29′S	094° 00′W	0540	05

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
08	16		99	56 3	56 8	83	02	6	8					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 81	33 76	27 19	0 000	7 03	4708 9
OBS	0000	-01 81	33 76	27 19		7 03	4708 9
STD	0010	-01 85	33 74	27 18	0 009	6 96	4708 8
OBS	0010	-01 85	33 74	27 18		6 96	4708 8
STD	0020	-01 85	33 76	27 19	0 018	6 88	4709 5
OBS	0020	-01 85	33 76	27 19		6 88	4709 5
STD	0030	-01 84	33 80	27 23	0 026	6 99	4710 4
OBS	0030	-01 84	33 80	27 23		6 99	4710 4
STD	0050	-01 81	33 97	27 36	0 042	6 40	4712 8
OBS	0050	-01 81	33 97	27 36		6 40	4712 8
STD	0075	-01 70	34 03	27 41	0 060	6 37	4716 3
OBS	0075	-01 70	34 03	27 41		6 37	4716 3
STD	0100	-01 72	34 07	27 44	0 076	6 34	4717 6
OBS	0100	-01 72	34 07	27 44		6 34	4717 6
OBS	0125	-01 73	34 10	27 47		6 34	4719 1
STD	0150	-01 63	34 13	27 49	0 107	6 32	4722 3
OBS	0150	-01 63	34 13	27 49		6 32	4722 3
OBS	0175	-01 50	34 16	27 51		6 20	4726 0
STD	0200	-01 33	34 20	27 54	0 136	5 98	4730 3
OBS	0200	-01 33	34 20	27 54		5 98	4730 3
OBS	0225	-01 12	34 25	27 57		5 81	4735 3
STD	0250	-01 03	34 30	27 61	0 161	5 68	4738 4
OBS	0250	-01 36*	34 15*	27 50*		6 05	4732 6*
OBS	0275	-00 87	34 34	27 63		5 57	4742 6
STD	0300	-00 65	34 38	27 66	0 184	5 49	4747 6
OBS	0300	-00 65	34 38	27 66		5 49	4747 6
OBS	0350	-00 05	34 47	27 70		5 01	4760 2
STD	0400	00 45	34 56	27 75	0 224	4 75	4771 2
OBS	0400	00 45	34 56	27 75		4 75	4771 2
OBS	0450	00 81	34 62	27 77		4 58	4779 8
STD	0500	01 04	34 67	27 80	0 258	4 35	4786 4
OBS	0500	01 04	34 67	27 80		4 35	4786 4
OBS	0525	01 08	34 69	27 81		4 31	4788 6

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0073	03	02	1961	02	71° 12′S	095° 32′W	0448	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
03	31		08	56 9	57 0	92	45		9					1		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ ΔD ↓	O₂ml/l ↓	V_f ↓
STD	0000	-01 81	33 90	27 31	0 000	6 78	4709 5
OBS	0000	-01 81	33 90	27 31		6 78	4709 5
STD	0010	-01 85	33 89	27 30	0 008	6 73	4709 4
OBS	0010	-01 85	33 89	27 30		6 73	4709 4
STD	0020	-01 85	33 89	27 30	0 016	6 72	4710 0
OBS	0020	-01 85	33 89	27 30		6 72	4710 0
STD	0030	-01 85	33 90	27 31	0 023	6 84	4710 7
OBS	0030	-01 85	33 90	27 31		6 84	4710 7
STD	0050	-01 86	33 97	27 36	0 038	6 63	4712 0
OBS	0050	-01 86	33 97	27 36		6 63	4712 0
STD	0075	-01 83	34 04	27 42	0 056	6 71	4714 3
OBS	0075	-01 83	34 04	27 42		6 71	4714 3
STD	0100	-01 83	34 07	27 44	0 072	6 70	4715 9
OBS	0100	-01 83	34 07	27 44		6 70	4715 9
OBS	0125	-01 77	34 09	27 46		6 58	4718 4
STD	0150	-01 70	34 13	27 49	0 103	6 44	4721 2
OBS	0150	-01 70	34 13	27 49		6 44	4721 2
OBS	0175	-01 44	34 19	27 53		6 13	4727 0
STD	0200	-01 30	34 24	27 57	0 130	5 97	4731 0
OBS	0200	-01 30	34 24	27 57		5 97	4731 0
OBS	0225	-01 21	34 27	27 59		5 94	4734 0
STD	0250	-00 98	34 30	27 61	0 155	5 78	4739 2
OBS	0250	-00 98	34 30	27 61		5 78	4739 2
OBS	0275	-00 66	34 36	27 64		5 61	4745 9
STD	0300	-00 37	34 41	27 67	0 178	5 35	4752 1
OBS	0300	-00 37	34 41	27 67		5 35	4752 1
OBS	0350	00 52	34 54	27 73		4 52	4769 2
OBS	0375	00 80	34 61	27 77		4 52	4775 2
STD	0400	00 94	34 64	27 78	0 216	4 44	4778 9
OBS	0400	00 94	34 64	27 78		4 44	4778 9
OBS	0425	01 02	34 65	27 78		4 20	4781 6

SURFACE OBSERVATIONS									
NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0074	03	02	1961	24	71° 45′ S	096° 49′ W	0570	05

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	09		08	55 1	55 5	86	02	1	2					8		

SUBSURFACE OBSERVATIONS															
	SAMPLE DEPTH (M)	T °C ↓		S‰ ↓		σ_t ↓		$\Sigma\Delta D$ ↓		O_2 ml/l ↓		V_f ↓	
STD	0000	-01	53	33	35	26	85	0	000	8	61	4711	6
OBS	0000	-01	53	33	35	26	85			8	61	4711	6
STD	0010	-01	58	33	35	26	85	0	012	8	69	4711	4
OBS	0010	-01	58	33	35	26	85			8	69	4711	4
STD	0020	-01	73	33	38	26	88	0	024	8	55	4709	7
OBS	0020	-01	73	33	38	26	88			8	55	4709	7
STD	0030	-01	66	33	63	27	08	0	035	7	32	4712	5
OBS	0030			33	63					7	32		
STD	0050	-01	56	33	90	27	30	0	052	6	14	4716	5
OBS	0050	-01	56	33	90	27	30			6	14	4716	5
STD	0075	-01	52	34	04	27	41	0	071	6	17	4719	2
OBS	0075	-01	52	34	04	27	41			6	17	4719	2
STD	0100	-01	65	34	06	27	43	0	087	6	43	4718	7
OBS	0100	-01	65	34	06	27	43			6	43	4718	7
OBS	0125	-01	67	34	09	27	46			6	33	4720	0
STD	0150	-01	62	34	12	27	48	0	118	6	32	4722	4
OBS	0150	-01	62	34	12	27	48			6	32	4722	4
OBS	0175	-01	56	34	14	27	49			6	12	4724	9
STD	0200	-01	42	34	19	27	53	0	147	6	02	4728	9
OBS	0200	-01	42	34	19	27	53			6	02	4728	9
OBS	0225	-01	19	34	25	27	57			5	90	4734	2
STD	0250	-01	18	34	26	27	58	0	174	5	84	4735	9
OBS	0250	-01	18	34	26	27	58			5	84	4735	9
OBS	0275	-00	81	34	33	27	62			5	59	4743	5
STD	0300	-00	69	34	36	27	64	0	198	5	55	4746	9
OBS	0300	-00	69	34	36	27	64			5	55	4746	9
OBS	0350	00	03	34	47	27	70			4	97	4761	4
STD	0400	00	46	34	57	27	75	0	238	4	75	4771	4
OBS	0400	00	46	34	57	27	75			4	75	4771	4
OBS	0450	01	05	34	66	27	79			4	41	4783	6
STD	0500	01	14	34	68	27	80	0	272	4	27	4788	0
OBS	0500	01	14	34	68	27	80			4	27	4788	0
OBS	0525	01	14	34	69	27	81			4	30	4789	5
OBS	0550	01	15	34	69	27	81			4	13	4791	1

SURFACE OBSERVATIONS									
NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0075	03	03	1961	03	71° 44′S	097° 53′W	0863	08

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ▼	WET ▼			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
04	11		08	59 2	59 2	99	45		9					1		

SUBSURFACE OBSERVATIONS																	
	SAMPLE DEPTH (M)	T °C ▼		S‰ ▼		σ_t ▼		$\Sigma\Delta D$ ▼		O_2 ml/l ▼		V_f ▼	
STD	0000	-01	68	33	31	26	82	0	000	8	41	4709	0
OBS	0000	-01	68	33	31	26	82			8	41	4709	0
STD	0010	-01	71	33	30	26	82	0	012	8	44	4709	1
OBS	0010	-01	71	33	30	26	82			8	44	4709	1
STD	0020	-01	78	33	42	26	92	0	024	8	09	4709	1
OBS	0020	-01	78	33	42	26	92			8	09	4709	1
STD	0030	-01	65	33	55	27	02	0	035	7	84	4712	3
OBS	0030	-01	65	33	55	27	02			7	84	4712	3
STD	0050	-01	83	33	74	27	18	0	055	7	19	4711	5
OBS	0050	-01	83	33	74	27	18			7	19	4711	5
STD	0075	-01	72	33	99	27	38	0	075	6	65	4715	8
OBS	0075	-01	72	33	99	27	38			6	65	4715	8
STD	0100	-01	65	34	05	27	42	0	092	6	55	4718	7
OBS	0100	-01	65	34	05	27	42			6	55	4718	7
OBS	0125	-01	71	34	10	27	47			6	46	4719	4
STD	0150	-01	67	34	12	27	48	0	123	6	38	4721	6
OBS	0150	-01	67	34	12	27	48			6	38	4721	6
OBS	0175	-01	62	34	14	27	50			6	28	4724	0
STD	0200	-01	55	34	17	27	52	0	152	6	24	4726	7
OBS	0200	-01	55	34	17	27	52			6	24	4726	7
OBS	0225	-01	46	34	20	27	54			6	14	4729	7
STD	0250	-01	18	34	24	27	56	0	179	5	86	4735	8
OBS	0250	-01	18	34	24	27	56			5	86	4735	8
STD	0300	-00	46	34	38	27	65	0	204	5	29	4750	6
OBS	0300	-00	46	34	38	27	65			5	29	4750	6
OBS	0350	00	09	34	48	27	70			4	96	4762	4
STD	0400	00	45	34	55	27	74	0	244	4	70	4771	1
OBS	0400	00	45	34	55	27	74			4	70	4771	1
STD	0500	00	90	34	64	27	78	0	279	4	56	4784	2
OBS	0500	00	90	34	64	27	78					4784	2
STD	0600	01	03	34	66	27	79	0	313	4	47	4792	2
OBS	0600	01	03	34	66	27	79			4	47	4792	2
OBS	0700	01	13	34	66	27	78			4	43	4799	6
STD	0800	01	17	34	68	27	80	0	379	4	37	4806	2
OBS	0800	01	17	34	68	27	80					4806	2
OBS	0850	01	18	34	69	27	81			4	33	4809	4

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0076	03	03	1961	23	71° 41′ S	098° 30′ W	0260	02

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ▼	WET ▼			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	15		05	58 8	59 0	85	02	0	8					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ▼	S‰ ▼	σ_t ▼	Σ Δ D ▼	O_2 ml/l ▼	V_f ▼
STD	0000	-01 70	33 31	26 83	0 000	8 05	4708 7
OBS	0000	-01 70	33 31	26 83		8 05	4708 7
STD	0010	-01 76	33 34	26 85	0 012	8 04	4708 5
OBS	0010	-01 76	33 34	26 85		8 04	4708 5
STD	0020	-01 80	33 50	26 98	0 024	7 56	4709 1
OBS	0020	-01 80	33 50	26 98		7 56	4709 1
STD	0030	-01 80	33 61	27 07	0 034	7 27	4710 2
OBS	0030		33 61			7 27	
STD	0050	-01 81	33 80	27 23	0 053	6 88	4712 1
OBS	0050	-01 81	33 80	27 23		6 88	4712 1
STD	0075	-01 61	34 02	27 40	0 072	6 32	4717 7
OBS	0075	-01 61	34 02	27 40		6 32	4717 7
STD	0100	-01 64	34 08	27 45	0 088	6 13	4719 0
OBS	0100	-01 64	34 08	27 45		6 13	4719 0
STD	0150	-01 57	34 13	27 49	0 119	6 03	4723 3
OBS	0150	-01 57				6 03	
OBS	0175	-01 54	34 17	27 52		5 96	4725 4
STD	0200	-01 32	34 22	27 55	0 147	5 82	4730 6
OBS	0200	-01 32	34 22	27 55		5 82	4730 6
OBS	0225	-01 07	34 28	27 59		5 59	4736 2
STD	0250	-00 58	34 36	27 64	0 172	5 21	4745 7
OBS	0250	-00 58	34 36	27 64		5 21	4745 7

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0077	03	08	1961	20	71° 51′ S	101° 22′ W	0237	02

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
04	20		83	60 6	61 1	73	02	1	8					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 78	33 47	26 96	0 000	8 47	4708 1
OBS	0000	-01 78	33 47	26 96		8 47	4708 1
STD	0010	-01 82	33 47	26 96	0 011	8 38	4708 1
OBS	0010	-01 82	33 47	26 96		8 38	4708 1
STD	0020	-01 82	33 47	26 96	0 022	8 42	4708 7
OBS	0020	-01 82	33 47	26 96		8 42	4708 7
STD	0030	-01 68	33 62	27 08	0 033	7 95	4712 2
OBS	0030	-01 68	33 62	27 08		7 95	4712 2
STD	0050	-01 68	33 95	27 34	0 050	6 77	4714 8
OBS	0050	-01 68	33 95	27 34		6 77	4714 8
STD	0075	-01 67	34 05	27 42	0 067	6 56	4716 9
OBS	0075	-01 58*	34 05	27 42*		6 56	4718 3*
STD	0100	-01 66	34 09	27 46	0 083	6 56	4718 7
OBS	0100	-01 66	34 09	27 46		6 56	4718 7
OBS	0125	-01 67	34 11	27 47		6 56	4720 1
STD	0150	-01 58	34 15	27 50	0 114	6 47	4723 2
OBS	0150	-01 58	34 15	27 50		6 47	4723 2
OBS	0175	-01 49	34 18	27 53		6 32	4726 2
STD	0200	-01 26	34 22	27 55	0 142	6 15	4731 5
OBS	0200	-01 26	34 22	27 55		6 15	4731 5
OBS	0225	-01 09	34 24	27 56		5 98	4735 7

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0078	03	09	1961	05	71° 37′ S	102° 28′ W	0650	06

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	18		87	62 9	63 4	69	02	4	6					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O₂ml/l ↓	V_f ↓
STD	0000	-01 83	33 92	27 32	0 000	6 81	4709 3
OBS	0000	-01 83	33 92	27 32		6 81	4709 3
STD	0010	-01 87	33 94	27 34	0 008	6 87	4709 3
OBS	0010	-01 87	33 94	27 34		6 87	4709 3
STD	0020	-01 86	33 94	27 34	0 015	6 87	4710 1
OBS	0020	-01 86	33 94	27 34		6 87	4710 1
STD	0030	-01 85	33 94	27 34	0 022	6 86	4710 8
OBS	0030	-01 85	33 94	27 34		6 86	4710 8
STD	0050	-01 85	33 95	27 35	0 037	6 83	4712 1
OBS	0050	-01 85	33 95	27 35		6 83	4712 1
STD	0075	-01 83	34 06	27 44	0 054	6 76	4714 4
OBS	0075	-01 83	34 06	27 44		6 76	4714 4
STD	0100	-01 80	34 13	27 49	0 070	6 68	4716 6
OBS	0100	-01 80	34 13	27 49		6 68	4716 6
STD	0150	-01 66	34 19	27 54	0 098	6 48	4722 1
OBS	0150	-01 66	34 19	27 54		6 48	4722 1
STD	0200	-01 34	34 26	27 59	0 125	6 17	4730 4
OBS	0200	-01 34	34 26	27 59		6 17	4730 4
STD	0250	-01 04	34 33	27 63	0 149	5 91	4738 4
OBS	0250	-01 04	34 33	27 63		5 91	4738 4
STD	0300	-00 58	34 40	27 67	0 171	5 54	4748 8
OBS	0300	-00 58	34 40	27 67		5 54	4748 8
OBS	0350	00 03	34 49	27 71		5 40	4761 5
STD	0400	00 42	34 53	27 72	0 211	4 92	4770 6
OBS	0400	00 42				4 92	
OBS	0450	00 87	34 58	27 74		4 75	4780 5
STD	0500	01 14	34 63	27 76	0 248	4 57	4787 7
OBS	0500	01 14	34 63	27 76		4 57	4787 7
OBS	0550	01 19	34 68	27 80		4 34	4791 7
STD	0600	01 23	34 70	27 81	0 282	4 36	4795 3
OBS	0600	01 23	34 70	27 81			4795 3
OBS	0630		34 71			4 37	

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00672	0079	03	10	1961	05	70° 51′S	101° 54′W	2388	23

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
09	23		87	62 2	62 5	79	02	6	8					8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$	O₂ ml/l ↓	V_f ↓
STD	0000	-01 78	33 29	26 81	0 000	7 69	4707 4
OBS	0000	-01 78	33 29	26 81		7 69	4707 4
STD	0010	-01 86	33 28	26 80	0 012	7 66	4706 6
OBS	0010	-01 86	33 28	26 80		7 66	4706 6
STD	0020	-01 83	33 28	26 80	0 025	7 65	4707 7
OBS	0020	-01 83	33 28	26 80		7 65	4707 7
STD	0030	-01 81	33 28	26 80	0 038	7 67	4708 6
OBS	0030	-01 81	33 28	26 80		7 67	4708 6
STD	0050	-01 82	34 02	27 40	0 057	6 67	4712 9
OBS	0050	-01 82	34 02	27 40		6 67	4712 9
STD	0075	-01 78	34 10	27 47	0 073	6 62	4715 3
OBS	0075	-01 78	34 10	27 47		6 62	4715 3
STD	0100	-01 76	34 11	27 48	0 088	6 55	4717 2
OBS	0100	-01 76	34 11	27 48		6 55	4717 2
STD	0150	-01 46	34 18	27 52	0 118	6 34	4725 2
OBS	0150	-01 46	34 18	27 52		6 34	4725 2
STD	0200	-00 72	34 32	27 61	0 144	5 74	4740 4
OBS	0200	-00 72	34 32	27 61		5 74	4740 4
STD	0250	00 01	34 44	27 67	0 166	5 16	4755 1
OBS	0250	00 01	34 44	27 67		5 16	4755 1
STD	0300	00 57	34 52	27 71	0 187	4 75	4766 9
OBS	0300	00 57				4 75	
OBS	0350	00 89	34 59	27 74		4 51	4774 9
STD	0400	01 15	34 64	27 77	0 224	4 35	4782 0
OBS	0400	01 15	34 64	27 77		4 35	4782 0
STD	0500	01 38	34 70	27 80	0 258	4 26	4791 6
OBS	0500	01 38	34 70	27 80		4 26	4791 6
STD	0600	01 28	34 72	27 82	0 290	4 42	4796 2
OBS	0600	01 28	34 72	27 82		4 42	4796 2
STD	0800	01 06	34 72	27 84	0 349	4 46	4804 8
OBS	0800	01 06	34 72	27 84		4 46	4804 8
STD	1000	00 91	34 72	27 85	0 407	4 58	4814 5
OBS	1000	00 91	34 77*	27 89*		4 58	4814 7*
STD	1200	00 83	34 72	27 85	0 463	4 63	4825 1
OBS	1200	00 83	34 72	27 85		4 63	4825 1
STD	1500	00 73	34 72	27 86	0 546	4 62	4841 5
OBS	1500	00 73	34 72	27 86		4 62	4841 5
STD	2000	00 51	34 72	27 87	0 680	4 74	4867 9
OBS	2000	00 51	34 72	27 87		4 74	4867 9
OBS	2300	00 45	34 77*	27 92*		4 58	4885 0*

SURFACE OBSERVATIONS								
NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00674	IP14	02	23	1961	17	73° 30′S	171° 27′E	0594	02

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
03	14		86	56 1	57 7	55	02	8	6	14	3	16	2	7		

SUBSURFACE OBSERVATIONS								
	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓	
STD	0000	-01 03	34 32	27 62	0 000		4723 6	
OBS	0000	-01 03	34 32	27 62			4723 6	
OBS	0005	-01 04	34 31	27 62			4723 7	
STD	0010	-01 04	34 28	27 59	0 005		4723 9	
OBS	0010	-01 04	34 28	27 59			4723 9	
OBS	0015	-00 96	34 30	27 60			4725 5	
STD	0020	-01 02	34 27	27 58	0 010		4724 8	
OBS	0020	-01 02	34 27	27 58			4724 8	
STD	0030	-01 05	34 28	27 59	0 015		4724 9	
OBS	0030	-01 05	34 28	27 59			4724 9	
STD	0050	-01 02	34 42	27 70	0 024		4727 2	
OBS	0050	-01 02	34 42	27 70			4727 2	
STD	0075	-01 47	34 69	27 94	0 031		4722 8	
OBS	0075	-01 47	34 69	27 94			4722 8	
STD	0100	-01 60	34 71	27 96	0 035		4722 3	
OBS	0100	-01 60	34 71	27 96			4722 3	
STD	0150	-01 82	34 76	28 00	0 042		4722 0	
OBS	0170	-01 89	34 79	28 03			4722 2	

SURFACE OBSERVATIONS								
NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00674	IP15	02	23	1961	20	73° 29′S	173° 29′E	0320	02

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
01	07		86	51 1	53 0	61	01	8	1	11	2	14	2	7		

SUBSURFACE OBSERVATIONS								
	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓	
STD	0000	-00 85	34 34	27 63	0 000		4726 5	
OBS	0000	-00 85	34 34	27 63			4726 5	
OBS	0005	-00 83	34 36	27 65			4727 2	
STD	0010	-00 86	34 28	27 58	0 005		4726 7	
OBS	0010	-00 86	34 28	27 58			4726 7	
OBS	0015	-00 76	34 32	27 61			4728 7	
STD	0020	-00 84	34 31	27 61	0 010		4727 7	
OBS	0020	-00 84	34 31	27 61			4727 7	
STD	0030	-00 86	34 27	27 58	0 015		4727 9	
OBS	0030	-00 86	34 27	27 58			4727 9	
STD	0050	-00 81	34 29	27 59	0 025		4729 9	
OBS	0050	-00 81	34 29	27 59			4729 9	
STD	0075	-00 80	34 29	27 59	0 038		4731 6	
OBS	0075	-00 80	34 29	27 59			4731 6	
STD	0100	-00 50	34 45	27 71	0 049		4738 4	
OBS	0100	-00 50	34 45	27 71			4738 4	
STD	0150	-00 18	34 63	27 84	0 066		4747 0	
OBS	0170	-00 16	34 65	27 85			4748 6	

SURFACE OBSERVATIONS									
NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00674	IP16	02	23	1961	23	73° 25′ S	175° 10′ E	0476	02

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
00	00		87	51 1	53 7	49	02	8	1	00	0	12	2	7		

SUBSURFACE OBSERVATIONS									
	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O₂ m l/l ↓	V_f ↓		
STD	0000	-00 74	34 38	27 66	0 000		4728 4		
OBS	0000	-00 74	34 38	27 66			4728 4		
OBS	0005	-00 83	34 34	27 63			4727 1		
STD	0010	-00 84	34 35	27 64	0 005		4727 3		
OBS	0010	-00 84	34 35	27 64			4727 3		
OBS	0015	-00 82	34 34	27 63			4727 9		
STD	0020	-00 89	34 36	27 65	0 009		4727 2		
OBS	0020	-00 89	34 36	27 65			4727 2		
STD	0030	-00 87	34 38	27 67	0 013		4728 2		
OBS	0030	-00 87	34 38	27 67			4728 2		
STD	0050	-00 84	34 49	27 75	0 021		4730 3		
OBS	0050	-00 84	34 49	27 75			4730 3		
STD	0075	-00 68	34 60	27 84	0 029		4734 7		
OBS	0075	-00 68	34 60	27 84			4734 7		
STD	0100	-00 94	34 62	27 86	0 036		4732 3		
OBS	0100	-00 94	34 62	27 86			4732 3		
STD	0150	-01 42	34 67	27 92	0 046		4728 0		
OBS	0170	-01 60	34 69	27 94			4726 4		

SURFACE OBSERVATIONS									
NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00674	IP17	02	24	1961	03	73° 33′ S	177° 00′ E	0555	02

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	16		87	54 3	56 8	29	02	6	8	16	2	19	2	7		

SUBSURFACE OBSERVATIONS									
	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O₂ m l/l ↓	V_f ↓		
STD	0000	-00 52	34 42	27 68	0 000		4732 0		
OBS	0000	-00 52	34 42	27 68			4732 0		
OBS	0005	-00 53	34 42	27 68			4732 1		
STD	0010	-00 55	34 41	27 68	0 004		4732 1		
OBS	0010	-00 55	34 41	27 68			4732 1		
OBS	0015	-00 53	34 42	27 68			4732 7		
STD	0020	-00 53	34 42	27 68	0 008		4733 0		
OBS	0020	-00 53	34 42	27 68			4733 0		
STD	0030	-00 54	34 42	27 68	0 013		4733 5		
OBS	0030	-00 54	34 42	27 68			4733 5		
OBS	0049	-00 51	34 42	27 68			4735 1		
STD	0050	-00 51	34 42	27 68	0 021		4735 1		
OBS	0074	-00 45	34 42	27 68			4737 5		
STD	0075	-00 44	34 43	27 69	0 031		4737 7		
OBS	0098	-00 28	34 63	27 84			4742 4		
STD	0100	-00 29	34 64	27 85	0 040		4742 4		
STD	0150	-00 50	34 64	27 86	0 052		4742 2		
OBS	0167	-00 75	34 64	27 87			4739 3		

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00674	IP18	02	26	1961	22	72° 32′S	171° 20′E	0402	02

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
06	23		89	54 8	56 0	70	02	6	8	23	2	20	2	7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 68	34 14	27 50	0 000		4712 6
OBS	0000	-01 68	34 14	27 50			4712 6
OBS	0005	-01 68	34 09	27 46			4712 7
STD	0010	-01 68	34 09	27 46	0 006		4713 0
OBS	0010	-01 68	34 09	27 46			4713 0
OBS	0015	-01 67	34 11	27 47			4713 6
STD	0020	-01 67	34 13	27 49	0 012		4713 9
OBS	0020	-01 67	34 13	27 49			4713 9
STD	0030	-01 67	34 17	27 52	0 018		4714 7
OBS	0030	-01 67	34 17	27 52			4714 7
OBS	0049	-01 59	34 19	27 54			4717 2
STD	0050	-01 59	34 19	27 54	0 029		4717 2
OBS	0074	-01 48	34 23	27 57			4720 6
STD	0075	-01 48	34 23	27 57	0 043		4720 6
OBS	0098	-01 39	34 27	27 59			4723 6
STD	0100	-01 38	34 28	27 60	0 056		4723 9
STD	0150	-01 29	34 45	27 74	0 077		4729 1
OBS	0167	-01 29	34 54	27 81			4730 5

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00674	IP19	02	26	1961	23	72° 23′S	170° 55′E	0302	01

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
06	18		88	54 8	56 0	70	02	6	8	23	2	20	2	7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 55	34 15	27 50	0 000		4714 7
OBS	0000	-01 55	34 15	27 50			4714 7
OBS	0005	-01 56	34 17	27 52			4715 0
STD	0010	-01 55	34 17	27 52	0 006		4715 4
OBS	0010	-01 55	34 17	27 52			4715 4
OBS	0015	-01 53	34 22	27 56			4716 2
STD	0020	-01 54	34 21	27 55	0 011		4716 3
OBS	0020	-01 54	34 21	27 55			4716 3
STD	0030	-01 52	34 22	27 56	0 017		4717 3
OBS	0030	-01 52	34 22	27 56			4717 3
OBS	0049	-01 46	34 20	27 54			4719 3
STD	0050	-01 46	34 20	27 54	0 028		4719 3
OBS	0074	-01 44	34 27	27 60			4721 4
STD	0075	-01 44	34 27	27 60	0 041		4721 5
OBS	0098	-01 39	34 25	27 58			4723 5

SURFACE OBSERVATIONS									
NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00674	IP20	02	27	1961	01	72° 14′ S	170° 32′ E	0412	02

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	18		88	53 8	55 0	68	02	6	8	23	3	00	0	5		

	SUBSURFACE OBSERVATIONS						
	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 72	34 04	27 42	0 000		4711 6
OBS	0000	-01 72	34 04	27 42			4711 6
OBS	0005	-01 71	34 05	27 43			4712 1
STD	0010	-01 73	34 05	27 43	0 007		4712 0
OBS	0010	-01 73	34 05	27 43			4712 0
OBS	0015	-01 70	34 06	27 43			4712 9
STD	0020	-01 71	34 06	27 43	0 013		4713 0
OBS	0020	-01 71	34 06	27 43			4713 0
STD	0030	-01 68	34 07	27 44	0 020		4714 1
OBS	0030	-01 68	34 07	27 44			4714 1
STD	0050	-01 46	34 10	27 46	0 032		4718 9
OBS	0050	-01 46	34 10	27 46			4718 9
STD	0075	-01 58	34 10	27 46	0 048		4718 5
OBS	0075	-01 58	34 10	27 46			4718 5
STD	0100	-01 52	34 14	27 49	0 063		4721 1
OBS	0100	-01 52	34 14	27 49			4721 1
STD	0150	-01 24	34 33	27 64	0 090		4729 3
OBS	0170	-01 06	34 45	27 73			4733 8

SURFACE OBSERVATIONS									
NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00674	IP21	02	27	1961	04	72° 04′ S	170° 59′ E	0329	02

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	18		87	54 5	55 3	78	02	0	8	18	3	19	2	5		

	SUBSURFACE OBSERVATIONS						
	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 35	34 29	27 61	0 000		4718 5
OBS	0000	-01 35	34 29	27 61			4718 5
OBS	0005	-01 39	34 31	27 63			4718 3
STD	0010	-01 39	34 32	27 64	0 005		4718 6
OBS	0010	-01 39	34 32	27 64			4718 6
OBS	0015	-01 36	34 33	27 64			4719 4
STD	0020	-01 37	34 33	27 64	0 009		4719 5
OBS	0020	-01 37	34 33	27 64			4719 5
STD	0030	-01 37	34 33	27 64	0 014		4720 1
OBS	0030	-01 37	34 33	27 64			4720 1
STD	0050	-01 35	34 33	27 64	0 023		4721 6
OBS	0050	-01 35	34 33	27 64			4721 6
STD	0075	-01 29	34 33	27 64	0 034		4724 1
OBS	0075	-01 29	34 33	27 64			4724 1
STD	0100	-01 30	34 34	27 65	0 046		4725 4
OBS	0100	-01 30	34 34	27 65			4725 4
STD	0150	-01 33	34 34	27 65	0 068		4727 9
OBS	0170	-01 35	34 34	27 65			4728 8

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00674	IP22	02	27	1961	03	72° 04′S	170° 32′E	0348	02

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	20		88	54 0	55 1	71	02	0	8	10	2	00	0	7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 50	34 18	27 53	0 000		4715 7
ORS	0000	-01 50	34 18	27 53			4715 7
ORS	0005	-01 53	34 16	27 51			4715 4
STD	0010	-01 51	34 16	27 51	0 006		4716 0
ORS	0010	-01 51	34 16	27 51			4716 0
ORS	0015	-01 51	34 16	27 51			4716 3
STD	0020	-01 48	34 16	27 51	0 012		4717 1
ORS	0020	-01 48	34 16	27 51			4717 1
STD	0030	-01 49	34 16	27 51	0 017		4717 5
ORS	0030	-01 49	34 16	27 51			4717 5
STD	0050	-01 44	34 16	27 51	0 029		4719 5
ORS	0050	-01 44	34 16	27 51			4719 5
STD	0075	-01 38	34 16	27 51	0 044		4721 9
ORS	0075	-01 38	34 16	27 51			4721 9
STD	0100	-01 33	34 20	27 54	0 058		4724 4
ORS	0100	-01 33	34 20	27 54			4724 4
STD	0150	-01 25	34 25	27 57	0 085		4728 8
ORS	0170	-01 22	34 26	27 58			4730 5

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00674	IP23	02	27	1961	19	72° 18′S	170° 11′E	0474	02

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
02	20		90	54 4	55 7	68	02	6	8	18	3	19	2	7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 68					
ORS	0000	-01 68					
ORS	0005	-01 68					
STD	0010	-01 70					
ORS	0010	-01 70					
ORS	0015	-01 68					
STD	0020	-01 66					
ORS	0020	-01 66					
STD	0030	-01 67					
ORS	0030	-01 67					
STD	0050	-01 66					
ORS	0050	-01 66					
STD	0075	-01 61					
ORS	0075	-01 61					
STD	0100	-01 57					
ORS	0100	-01 57					
STD	0150	-01 49					
ORS	0170	-01 45					

SURFACE OBSERVATIONS									
NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00674	IP24	02	27	1961	06	71° 55′ S	171° 30′ E	0366	02

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	14		53	53 4	55 0	63	02	4	8							

SUBSURFACE OBSERVATIONS							
	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 21	34 31	27 62	0 000		4720 8
OBS	0000	-01 21	34 31	27 62			4720 8
OBS	0005	-01 23	34 33	27 64			4720 9
STD	0010	-01 22	34 34	27 65	0 005		4721 3
OBS	0010	-01 22	34 41*	27 70*			4721 7
OBS	0015	-01 20	34 35	27 65			4722 0
STD	0020	-01 23	34 35	27 65	0 009		4721 8
OBS	0020	-01 23	34 35	27 65			4721 8
STD	0030	-01 24	34 35	27 65	0 014		4722 3
OBS	0030	-01 24	34 35	27 65			4722 3
STD	0050	-01 18	34 34	27 64	0 023		4724 4
OBS	0050	-01 18	34 34	27 64			4724 4
STD	0075	-01 08	34 36	27 66	0 034		4727 5
OBS	0075	-01 08	34 36	27 66			4727 5
STD	0100	-01 00	34 39	27 68	0 045		4730 4
OBS	0100	-01 00	34 39	27 68			4730 4
STD	0150	-01 08	34 56	27 82	0 062		4732 8
OBS	0170	-01 20	34 67	27 91			4732 6

SURFACE OBSERVATIONS									
NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00674	IP25	02	24	1961	22	71° 36′ S	172° 10′ E	0540	02

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	18		88	53 9	55 4	62	02	6	8	18	3	17	2	7		

SUBSURFACE OBSERVATIONS							
	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-00 68	34 36	27 64	0 000		4729 3
OBS	0000	-00 68	34 36	27 64			4729 3
OBS	0005	-00 70	34 36	27 64			4729 2
OBS	0009	-00 70	34 45	27 72			4729 9
STD	0010	-00 68	34 45	27 71	0 004		4730 2
OBS	0013	-00 64	34 45	27 71			4731 0
OBS	0018	-00 68	34 47	27 73			4730 8
STD	0020	-00 69	34 47	27 73	0 008		4730 8
OBS	0027	-00 72	34 47	27 73			4730 7
STD	0030	-00 71	34 47	27 73	0 012		4731 0
OBS	0045	-00 67	34 49	27 75			4732 6
STD	0050	-00 67	34 51	27 76	0 019		4733 0
OBS	0068	-00 68	34 55	27 80			4734 1
STD	0075	-00 67	34 55	27 80	0 027		4734 7
OBS	0091	-00 64	34 55	27 79			4736 1
STD	0100	-00 62	34 55	27 79	0 035		4737 0
STD	0150	-00 53	34 55	27 79	0 051		4741 3
OBS	0154	-00 52	34 55	27 79			4741 7

SURFACE OBSERVATIONS									
NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00674	IP26	02	24	1961	19	71° 36′S	173° 50′E	2012	02

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
13	18	23	88	53 8	55 4	61	02	6	8	18	4	16	2	7		

SUBSURFACE OBSERVATIONS								
	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓	
STD	0000	-00 79	34 43	27 70	0 000		4727 8	
OBS	0000	-00 79	34 43	27 70			4727 8	
OBS	0005	-00 82	34 43	27 70			4727 7	
OBS	0009	-00 83	34 43	27 70			4727 8	
STD	0010	-00 82	34 43	27 70	0 004		4728 0	
OBS	0013	-00 80	34 43	27 70			4728 5	
OBS	0018	-00 80	34 43	27 70			4728 8	
STD	0020	-00 81	34 43	27 70	0 008		4728 7	
OBS	0027	-00 84	34 43	27 71			4728 7	
STD	0030	-00 83	34 43	27 70	0 012		4729 0	
OBS	0045	-00 80	34 43	27 70			4730 4	
STD	0050	-00 79	34 43	27 70	0 020		4730 8	
OBS	0068	-00 78	34 43	27 70			4732 0	
STD	0075	-00 78	34 43	27 70	0 030		4732 5	
OBS	0091	-00 78	34 43	27 70			4733 4	
STD	0100	-00 72	34 44	27 71	0 040		4734 9	
STD	0150	00 26	34 61	27 80	0 057		4753 6	
OBS	0154	00 38	34 63	27 81			4755 8	

SURFACE OBSERVATIONS									
NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00674	IP27	02	24	1961	16	71° 36′S	175° 30′E	2204	02

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
09	16		88	54 0	56 2	49	02	6	8	16	4	16	2	7		

SUBSURFACE OBSERVATIONS								
	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓	
STD	0000	-00 67	34 33	27 62	0 000		4729 3	
OBS	0000	-00 67	34 33	27 62			4729 3	
OBS	0005	-00 67	34 33	27 62			4729 6	
OBS	0009	-00 66	34 33	27 62			4730 0	
STD	0010	-00 65	34 33	27 62	0 005		4730 2	
OBS	0014	-00 62	34 34	27 62			4730 9	
OBS	0019	-00 62	34 34	27 62			4731 2	
STD	0020	-00 62	34 34	27 62	0 010		4731 3	
OBS	0028	-00 64	34 33	27 62			4731 4	
STD	0030	-00 64	34 33	27 62	0 014		4731 5	
OBS	0047	-00 63	34 34	27 62			4732 7	
STD	0050	-00 63	34 34	27 62	0 024		4732 9	
OBS	0070	-00 64	34 33	27 62			4733 9	
STD	0075	-00 64	34 33	27 62	0 036		4734 2	
OBS	0094	-00 62	34 32	27 61			4735 6	
STD	0100	-00 58	34 33	27 61	0 048		4736 6	
STD	0150	00 42	34 53	27 72	0 069		4755 7	
OBS	0160	00 75	34 60	27 76			4761 6	

SURFACE OBSERVATIONS									
NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00674	IP28	02	24	1961	12	71° 36′ S	177° 20′ E	0914	02

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
14	16		85	52 8	54 7	57	02	6	8	16	3	12	2	7		

SUBSURFACE OBSERVATIONS															
	SAMPLE DEPTH (M)	T °C ↓		S‰ ↓		σ_t ↓		ΣΔD ↓		O_2 ml/l ↓		V_f ↓	
STD	0000	-00	73	34	40	27	68	0	000			4728	7
OBS	0000	-00	73	34	40	27	68					4728	7
OBS	0005	-00	76	34	40	27	68					4728	5
OBS	0009	-00	76	34	40	27	68					4728	7
STD	0010	-00	75	34	40	27	68	0	004			4728	9
OBS	0014	-00	72	34	39	27	67					4729	6
OBS	0019	-00	73	34	40	27	68					4729	8
STD	0020	-00	73	34	40	27	68	0	009			4729	8
OBS	0028	-00	74	34	40	27	68					4730	2
STD	0030	-00	74	34	40	27	68	0	013			4730	3
OBS	0047	-00	72	34	41	27	68					4731	6
STD	0050	-00	71	34	41	27	68	0	021			4732	0
OBS	0070	-00	68	34	41	27	68					4733	6
STD	0075	-00	67	34	40	27	67	0	032			4734	0
OBS	0094	-00	64	34	38	27	66					4735	6
STD	0100	-00	61	34	39	27	66	0	042			4736	4
STD	0150	00	06	34	49	27	71	0	063			4750	1
OBS	0160	00	27	34	53	27	73					4754	0

APPENDIX B

BOTTOM SEDIMENT SAMPLES

SUMMARY AND FIELD ANALYSES

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA
PRNC-NHO-3167/13 (Rev. 8-58)

HYDROGRAPHIC OFFICE

VESSEL: USS STATEN ISLAND | CRUISE: 00672 | DEEP FREEZE 61 (Eastern Ross Sea - Cape Colbeck Area)

Sample NO.	DATE 1960	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENE-TRATION	LENGTH OF CORE	ROCK COLOR CHART CODE NUMBERS CORE TOP	ROCK COLOR CHART CODE NUMBERS CORE BOTTOM	FIELD DESCRIPTION	REMARKS	OBS. INIT.
1	21 Dec	78°08'S	162°50'W	350	80#	5'	24"	10YR4/2	5Y 4/1	Olv. Gray at top. Drk Yell. Brn. at btm. Clay and Silt.	Top inch to Tex. Rep. Sta. No. SI-2	
2	21 Dec	77°35'S	162°20'W	370	80#	5'	18"	10YR5/2		Drk. Yell. Brn. streaks with Olv. Gray "underneath."		
3	21 Dec	77°31'S	169°34'W	245	80#	7"	6 1/2"		5Y 4/1	Top color Med. Gray w/green. Stiff, almost dry at bottom.	Sta. No. SI-12	
4	21 Dec	77°32'S	158°34'W	135	80#	0	0	---	---	Bryozoa, etc.	Total Samp. in Jar. Sta. No. SI-14	
5	22 Dec	77°52'S	160°38'W	392	80#	4'	21"	10YR6/2	10YR4/2	Slight cohesion, many rock fragments, water column muddy.	Sta. No. SI-13	
6	22 Dec	76°57'S	162°21'W	330	80#	26"	16"	10YR6/2	5GY4/1		Sta. No. SI-4	
7	22 Dec	76°32'S	162°30'W	252	80#	12"	11"	Between 10YR6/2 10YR4/2	5GY4/1	Material in cutter quite plastic w/rock fragments.	Sta. No. SI-5	
8	22 Dec	76°05'S	162°45'W	1400	80#	4'	12"	10YR6/2	10YR4/2	Soft	Sta. No. SI-6	
9	23 Dec	75°25'S	162°08'W	1850	80#	4'	25 1/2"	10YR5/2	5Y 4/2	Top-Drk. Yell. Brn. Btm. 3 inches 5Y 4/2	Sta. No. SI-7	

VESSEL: USS STATEN ISLAND | CRUISE: 00672 | DEEP FREEZE 61 (Eastern Ross Sea - Cape Colbeck Area)

Sample NO.	DATE 1960	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENE-TRATION	LENGTH OF CORE	ROCK COLOR CHART CODE NUMBERS CORE TOP	ROCK COLOR CHART CODE NUMBERS CORE BOTTOM	FIELD DESCRIPTION	REMARKS	OBS. INIT.
10	23 Dec	75°25'S	160°11'W	1870	80#		22 1/2"	10YR6/2	10YR4/2	Mud	Sta. No. SI-8	
11	24 Dec	75°56'S	160°41'W	1650	80#	3'	15"	5YR4/1	5YR4/1	Uniform color throughout. Sandy mud at top.	Sta. No. SI-9	
12	24 Dec	76°28'S	160°29'W	230	80#	2'	20 1/4"	5YR4/1	N-4	Top-Brnish. Gray Mid-Olv. Gray (Clay w/pebbles) Btm-Med. Drk. Gray	Sta. No. SI-10	
13	24 Dec	77°00'S	160°40'W	245	80#	23"	16"	Between 10YR6/2 10YR4/2	5Y 4/1		Sta. No. SI-11	
14	24 Dec	77°06'S	158°17'W	110	80#	10"	7"	5Y 5/2	5Y 5/2	Firm, Sandy	Sta. No. SI-15	
15	25 Dec	76°33'S	157°58'W	175	80#	-	2"	---	---	Pebbles and Silt.	Sample in amber glass jar. Sta. No. SI-16	
16	25 Dec	76°08'S	158°08'W	1900	80#	4'	14"	5Y 6/1	5Y 6/1	Light Olv. Gray mud throughout.	Sta. No. SI-17	
17	25 Dec	75°38'S	158°43'W	1905	80#	-	25 1/2"	10YR6/2	10YR4/2	Mud	Sta. No. SI-18	
18	26 Dec	75°41'S	156°47'W	1980	80#	4'	-	---	---	Light yellowish brown	Sample in small core tube. Core washed. Sta. No. SI-19	

VESSEL: USS STATEN ISLAND | CRUISE: 00672 | DEEP FREEZE 61 (Eastern Ross Sea - Cape Colbeck Area)

Sample NO.	DATE 1960	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENE-TRATION	LENGTH OF CORE	ROCK COLOR CHART CODE NUMBERS CORE TOP	ROCK COLOR CHART CODE NUMBERS CORE BOTTOM	FIELD DESCRIPTION	REMARKS	OBS. INIT.
19	26 Dec	76°01'S	156°44'W	1900	80#	5'	34 1/2"	5Y 5/2	5Y 5/2	Light Olive Gray	Sta. No. SI-20	
20	26 Dec	76°34'S	155°49'W	250	80#	4"	2"	---	---	Rock and gravel.	Sta. No. SI-21	
21	27 Dec	77°01'S	155°50'W	560	80#	3'	24 1/2"	10YR6/2	10YR6/2	Pale Yellowish Brown.	Sta. No. SI-22	
22	27 Dec	77°00'S	153°47'W	150	80#	30"	14"	10YR6/2	10YR6/2	Pale Yellowish Brown mud.	Sta. No. SI-23	
23	27 Dec	77°16'S	152°22'W	115	80#	12"	5"	10YR6/2	10YR6/2	Pale Yellowish Brown mud with rocks.	Sta. No. SI-31	
24	27 Dec	77°00'S	151°48'W	620	80#	40"	31"	10YR6/2	5Y 5/2	Pale Yellowish Brown.	Sta. No. SI-30	
25	27 Dec	76°30'S	153°53'W	300	80#	30"	17"	10YR6/2	5GY6/1		Sta. No. SI-24	
26	28 Dec	76°30'S	151°39'W	150	80#	4'	18"	5Y 5/2	5Y 5/2	Highly plastic - light Olive Gray mud.	Sta. No. SI-29	
27	28 Dec	76°00'S	153°54'W	1775	80#	-	40"	5YR5/2	5Y 5/2		Sta. No. SI-25	

VESSEL: USS STATEN ISLAND | CRUISE: 00672 | DEEP FREEZE 61 (Eastern Ross Sea – Cape Colbeck Area)

Sample NO.	DATE 1960	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENE-TRATION	LENGTH OF CORE	ROCK COLOR CHART CODE NUMBERS CORE TOP	ROCK COLOR CHART CODE NUMBERS CORE BOTTOM	FIELD DESCRIPTION	REMARKS	OBS. INIT.
28	28 Dec	75°58'S	151°58'W	145	80#	18"	6 1/2"	5Y 5/2	10Y 4/2	Muddy	Sta. No. SI-28	
29	28 Dec	75°31'S	152°08'W	1860	80#	5'	45"	10YR6/2	N-4	Pale Yell. Brn. to within 8" of btm. Btm. 8" Med. Drk. Gray. (Mud)	Sta. No. SI-27	
30	30 Dec	75°20'S	154°12'W	2040	80#						Sample in core tube 2 1/2" length. Sta. No. SI-26	

VESSEL: USS STATEN ISLAND | CRUISE: 00672 | DEEP FREEZE 61 (Amundsen Sea Area)

Sample NO.	DATE 1961	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENE-TRATION	LENGTH OF CORE	ROCK COLOR CHART CODE NUMBERS CORE TOP	ROCK COLOR CHART CODE NUMBERS CORE BOTTOM	FIELD DESCRIPTION	REMARKS	OBS. INIT.
31	27 Jan	69°52'S	119°58'W	1572	80#	5'	38"	10YR6/2	10YR5/2	Sand	Sta. No. SI-38	
32	27 Jan	70°21'S	118°56'W	1618	80#	5'	42"	10YR5/2	10YR4/2	Top-Sand and Mud Btm-Clay	Sta. No. SI-39	
33	28 Jan	70°53'S	118°26'W	1470	80#	5'	41"	10YR5/2	N-5	Top-Pale Yell. Brn. sand and mud. Btm-Medium Gray clay.	Top inch to Tex. Rep. Cutter portion in small tube #33 w/T. Sta. No. SI-40	
34	28 Jan	71°23'S	118°00'W	1203	80#	30"	24"	10YR5/2	10YR3/2	Top-Sand and mud. Btm-Hard and stony.	Top inch to Tex. Rep. Sta. No. SI-41	
35	29 Jan	71°30'S	117°10'W	965	80#	3'	29"	10YR4/2	10YR5/2	Btm-Clay	Portion in small tube #35 from cutter. Sta. No. SI-42	
36	29 Jan	70°59'S	116°56'W	1469	80#	5'	41"	10YR4/2	5Y 4/1	Top-Drk. Yell. Brn. Btm-Olive gray.	Four or five inches fell from core at surface of water. Sta. No. SI-43	
37	30 Jan	70°30'S	116°39'W	1722	80#	5'	40 1/2"	10YR5/2	5Y 4/1	Top-Drk. Yell. Brn. Sand and Mud. Btm-Olive gray clay.	Top inch to Tex. Rep. Sta. No. SI-44	
38	30 Jan	70°03'S	116°30'W	1910	80#	30"	21 1/2"	10YR4/2	5Y 4/1	Top-Drk. Yell. Brn. Clay Btm-clay	Sta. No. SI-45	

VESSEL: USS STATEN ISLAND | CRUISE: 00672 | DEEP FREEZE 61 (Amundsen Sea Area)

Sample NO.	DATE 1961	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX PENE-TRATION	LENGTH OF CORE	ROCK COLOR CHART CODE NUMBERS CORE TOP	ROCK COLOR CHART CODE NUMBERS CORE BOTTOM	FIELD DESCRIPTION	REMARKS	OBS. INIT.
39	30 Jan	70°05'S	115°31'W	1886	80#	5'	42"	10YR4/2	5Y 4/1	Top-Drk. Yell. Brn. Btm-Olv. Gray	Sta. No. SI-46	
40	31 Jan	70°08'S	114°14'W	1935	80#	5'	40"	10YR6/2	5Y 4/1	Top-Pale Yell. Brn. Btm-Olive Gray	Top inch to Tex. Rep. Sta. No. SI-47	
41	31 Jan	70°07'S	112°58'W	2013	80#	18"	9"	10YR4/2	10YR4/2	Yellowish Brown sand and mud.	Sta. No. SI-48	
42	31 Jan	70°08'S	111°30'W	1897	80#	5'	32"	10YR4/2	10YR4/2	Dark Yellowish Brown	Sta. No. SI-49	
43	1 Feb	69°43'S	111°26'W	1927	80#	4 1/2'	34"	10YR5/2	10YR6/2		Sta. No. SI-50	
44	2 Feb	69°13'S	111°28'W	2018	80#	5'	52"	10YR5/2	10YR5/2		Possible double core. Sta. No. SI-51	
45	2 Feb	69°13'S	110°08'W	2040	80#	5'	36"	10YR5/2	10YR5/2		Sta. No. SI-52	
46	2 Feb	69°13'S	108°42'W	5253	80#	5'	52 1/4"	10YR5/2	5YR5/2	Muddy ooze.	Sta. No. SI-53	

VESSEL: USS STATEN ISLAND | CRUISE: 00672 | DEEP FREEZE 61 (Amundsen Sea Area)

Sample NO.	DATE 1961	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENE-TRATION	LENGTH OF CORE	ROCK COLOR CHART CODE NUMBERS CORE TOP	ROCK COLOR CHART CODE NUMBERS CORE BOTTOM	FIELD DESCRIPTION	REMARKS	OBS. INIT.
47	3 Feb	69°13'S	107°16'W	2329	80#	18"	2"	10YR5/2	10YR5/2		Top inch to Tex. USARP Rep. Sta. No. SI-54	
48	3 Feb	69°15'S	105°44'W	2256	80#	4'	37 1/2"	10YR5/2	10YR5/2	Mid. 10YR6/2	Sta. No. SI-55	
49	3 Feb	69°46'S	105°40'W	2129	80#	5'	30"	10YR5/2	10YR5/2		Sta. No. SI-56	
50	4 Feb	70°18'S	105°36'W	1826	80#	40"	23"	10YR4/2	10YR6/2	Top-Sand and Mud. Btm-Mud.	Sta. No. SI-57	
51	4 Feb	70°18'S	107°00'W	2081	80#	5'	45"	10YR5/2	10YR5/2	Mud.	Sta. No. SI-58	
52	5 Feb	69°49'S	106°59'W	2230	80#	5'	44"	10YR4/2	10YR6/2		Portion in retainer quite adhesive. Sta. No. SI-59	
53	5 Feb	69°33'S	106°58'W	2290	80#	5'	36 1/2"	10YR6/2	10YR5/2		Sta. No. SI-60	
54	5 Feb	69°26'S	105°43'W	2037	80#	5'	48"	10YR6/2	10YR4/2	Top 3" 10YR6/2 then 10YR4/2 blending to 10YR5/2.	A few inches of core lost at sur. of water. Sta. No. SI-61	

VESSEL: USS STATEN ISLAND | CRUISE: 00672 | DEEP FREEZE 61 (Thurston Peninsula - Bellingshausen Sea Area)

Sample NO.	DATE 1961	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENE-TRATION	LENGTH OF CORE	ROCK COLOR CHART CODE NUMBERS CORE TOP	ROCK COLOR CHART CODE NUMBERS CORE BOTTOM	FIELD DESCRIPTION	REMARKS	OBS. INIT.
55	7 Feb	71°45'S	095°57'W	221	80#	21"	14"	5Y 4/2	10YR5/2	Sandy	Sta. No. SI-62	
56	9 Feb	72°32'S	093°02'W	200	80#	18"	10"	5Y 5/1	5Y 5/1	Med. Olv. Gray	Sta. No. SI-63	
57	10 Feb	72°29'S	091°43'W	87	80#	10"	4"	5Y 6/1	5Y 6/1		Sta. No. SI-64	
58	10 Feb	72°27'S	092°14'W	232	80#	30"	21"	5Y 6/1	5Y 6/1		Sta. No. SI-65	
59	11 Feb	72°24'S	092°54'W	397	80#			5Y 6/1	5Y 6/1		Sta. No. SI-66	
60	11 Feb	72°14'S	092°45'W	224	80#	3'	8"	5Y 5/1			Core washed. Sta. No. SI-67	
61	11 Feb	72°16'S	091°26'W	183	80#	24"	17"	5Y 6/1	N-5		Sta. No. SI-68	
62	12 Feb	72°13'S	092°04'W	235	80#	4'	20"	5Y 6/1	5Y 5/1		Sta. No. SI-69	
63	17 Feb	72°41'S	091°55'W	282	80#	12"	6"	5Y 6/1	5Y 6/1	Sand and mud.	Sta. No. SI-70	

VESSEL: USS STATEN ISLAND | CRUISE: 00672 | DEEP FREEZE 61 (Thurston Peninsula - Bellingshausen Sea Area)

Sample NO.	DATE 1961	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENE-TRATION	LENGTH OF CORE	ROCK COLOR CHART CODE NUMBERS CORE TOP	ROCK COLOR CHART CODE NUMBERS CORE BOTTOM	FIELD DESCRIPTION	REMARKS	OBS. INIT.
64	22 Feb	71°45'S	092°54'W	224	80#		31"	5GY 6/1	5GY 6/1		Sta. No. SI-71	
65	28 Feb	71°29'S	094°00'W	295	80#		12"	10YR 5/2	5Y 4/1		Sta. No. SI-72	
66	2 Mar	71°12'S	095°32'W	250	80#	3'	21"	10YR 6/2	10YR 4/2	Btm. 2"-5Y 4/1	Sta. No. SI-73	
67	2 Mar	71°45'S	096°49'W	312	80#	4'	24"	10YR 5/2	5Y 4/1	Sand and mud. Shell on top.	Sta. No. SI-74	
68	3 Mar	71°44'S	097°53'W	471	80#		42"	10YR 5/2	N-4		Sta. No. SI-75	
69	3 Mar	71°41'S	098°30'W	142	80#		4"	10YR 5/2			Sta. No. SI-76	
70	9 Mar	71°37'S	102°28'W	355	80#	3'	21"	10YR 5/2	N-4	Sand.	Sta. No. SI-78	
71	10 Mar	70°51'S	101°54'W	1306	80#	3'	23"	10YR 5/2	10YR 5/2	Sandy.	Sta. No. SI-79	

U. S. Navy Hydrographic Office
OPERATION DEEP FREEZE 61, 1960-1961
MARINE GEOPHYSICAL INVESTIGATIONS,
June 1962. 217 p., including 81 figs., 2
tables. (TR-105).

Contains results of the Marine Geophysical Investigations in the Antarctic and adjacent waters. Data on the thermal structure, salinity, density, dissolved oxygen, field analysis of bottom sediment, ice distribution, bathymetry across the South Sandwich Trench, and geomagnetic measurements are presented. A discussion of the Antarctic Convergence is also included.

Appendix A contains a tabulation of oceanographic data for 94 stations and Appendix B, the field analysis of 71 bottom sediment samples.

1. Antarctic - oceanography
2. Antarctic - bottom sediments
3. Antarctic - ice
4. Antarctic - geomagnetics
5. Antarctic - bathymetry
6. USS STATEN ISLAND
7. USS EDISTO
8. USS GLACIER
9. USCGC EASTWIND
10. HMNZS ENDEAVOUR

i. Title: Operation DEEP FREEZE 61, 1961-1962 Marine Geophysical Investigations.

ii. TR-105

U. S. Navy Hydrographic Office
OPERATION DEEP FREEZE 61, 1960-1961
MARINE GEOPHYSICAL INVESTIGATIONS,
June 1962. 217 p., including 81 figs., 2
tables. (TR-105).

Contains results of the Marine Geophysical Investigations in the Antarctic and adjacent waters. Data on the thermal structure, salinity, density, dissolved oxygen, field analysis of bottom sediment, ice distribution, bathymetry across the South Sandwich Trench, and geomagnetic measurements are presented. A discussion of the Antarctic Convergence is also included.

Appendix A contains a tabulation of oceanographic data for 94 stations and Appendix B, the field analysis of 71 bottom sediment samples.

1. Antarctic - oceanography
2. Antarctic - bottom sediments
3. Antarctic - ice
4. Antarctic - geomagnetics
5. Antarctic - bathymetry
6. USS STATEN ISLAND
7. USS EDISTO
8. USS GLACIER
9. USCGC EASTWIND
10. HMNZS ENDEAVOUR

i. Title: Operation DEEP FREEZE 61, 1961-1962 Marine Geophysical Investigations.

ii. TR-105

U. S. Navy Hydrographic Office
OPERATION DEEP FREEZE 61, 1960-1961
MARINE GEOPHYSICAL INVESTIGATIONS,
June 1962. 217 p., including 81 figs., 2
tables. (TR-105).

Contains results of the Marine Geophysical Investigations in the Antarctic and adjacent waters. Data on the thermal structure, salinity, density, dissolved oxygen, field analysis of bottom sediment, ice distribution, bathymetry across the South Sandwich Trench, and geomagnetic measurements are presented. A discussion of the Antarctic Convergence is also included.

Appendix A contains a tabulation of oceanographic data for 94 stations and Appendix B, the field analysis of 71 bottom sediment samples.

1. Antarctic - oceanography
2. Antarctic - bottom sediments
3. Antarctic - ice
4. Antarctic - geomagnetics
5. Antarctic - bathymetry
6. USS STATEN ISLAND
7. USS EDISTO
8. USS GLACIER
9. USCGC EASTWIND
10. HMNZS ENDEAVOUR

i. Title: Operation DEEP FREEZE 61, 1961-1962 Marine Geophysical Investigations.

ii. TR-105

U. S. Navy Hydrographic Office
OPERATION DEEP FREEZE 61, 1960-1961
MARINE GEOPHYSICAL INVESTIGATIONS,
June 1962. 217 p., including 81 figs., 2
tables. (TR-105).

Contains results of the Marine Geophysical Investigations in the Antarctic and adjacent waters. Data on the thermal structure, salinity, density, dissolved oxygen, field analysis of bottom sediment, ice distribution, bathymetry across the South Sandwich Trench, and geomagnetic measurements are presented. A discussion of the Antarctic Convergence is also included.

Appendix A contains a tabulation of oceanographic data for 94 stations and Appendix B, the field analysis of 71 bottom sediment samples.

1. Antarctic - oceanography
2. Antarctic - bottom sediments
3. Antarctic - ice
4. Antarctic - geomagnetics
5. Antarctic - bathymetry
6. USS STATEN ISLAND
7. USS EDISTO
8. USS GLACIER
9. USCGC EASTWIND
10. HMNZS ENDEAVOUR

i. Title: Operation DEEP FREEZE 61, 1961-1962 Marine Geophysical Investigations.

ii. TR-105

U. S. Navy Hydrographic Office
OPERATION DEEP FREEZE 61, 1960-1961
MARINE GEOPHYSICAL INVESTIGATIONS,
June 1962. 217 p., including 81 figs., 2
tables. (TR-105).

Contains results of the Marine Geophysical Investigations in the Antarctic and adjacent waters. Data on the thermal structure, salinity, density, dissolved oxygen, field analysis of bottom sediment, ice distribution, bathymetry across the South Sandwich Trench, and geomagnetic measurements are presented. A discussion of the Antarctic Convergence is also included.

Appendix A contains a tabulation of oceanographic data for 94 stations and Appendix B, the field analysis of 71 bottom sediment samples.

1. Antarctic - oceanography
2. Antarctic - bottom sediments
3. Antarctic - ice
4. Antarctic - geomagnetics
5. Antarctic - bathymetry
6. USS STATEN ISLAND
7. USS EDISTO
8. USS GLACIER
9. USCGC EASTWIND
10. HMNZS ENDEAVOUR

i. Title: Operation DEEP FREEZE 61, 1961-1962 Marine Geophysical Investigations.

ii. TR-105

U. S. Navy Hydrographic Office
OPERATION DEEP FREEZE 61, 1960-1961
MARINE GEOPHYSICAL INVESTIGATIONS,
June 1962. 217 p., including 81 figs., 2
tables. (TR-105).

Contains results of the Marine Geophysical Investigations in the Antarctic and adjacent waters. Data on the thermal structure, salinity, density, dissolved oxygen, field analysis of bottom sediment, ice distribution, bathymetry across the South Sandwich Trench, and geomagnetic measurements are presented. A discussion of the Antarctic Convergence is also included.

Appendix A contains a tabulation of oceanographic data for 94 stations and Appendix B, the field analysis of 71 bottom sediment samples.

1. Antarctic - oceanography
2. Antarctic - bottom sediments
3. Antarctic - ice
4. Antarctic - geomagnetics
5. Antarctic - bathymetry
6. USS STATEN ISLAND
7. USS EDISTO
8. USS GLACIER
9. USCGC EASTWIND
10. HMNZS ENDEAVOUR

i. Title: Operation DEEP FREEZE 61, 1961-1962 Marine Geophysical Investigations.

ii. TR-105

U. S. Navy Hydrographic Office
OPERATION DEEP FREEZE 61, 1960-1961
MARINE GEOPHYSICAL INVESTIGATIONS,
June 1962. 217 p., including 81 figs., 2
tables. (TR-105).

Contains results of the Marine Geophysical Investigations in the Antarctic and adjacent waters. Data on the thermal structure, salinity, density, dissolved oxygen, field analysis of bottom sediment, ice distribution, bathymetry across the South Sandwich Trench, and geomagnetic measurements are presented. A discussion of the Antarctic Convergence is also included.

Appendix A contains a tabulation of oceanographic data for 94 stations and Appendix B, the field analysis of 71 bottom sediment samples.

1. Antarctic - oceanography
2. Antarctic - bottom sediments
3. Antarctic - ice
4. Antarctic - geomagnetics
5. Antarctic - bathymetry
6. USS STATEN ISLAND
7. USS EDISTO
8. USS GLACIER
9. USCGC EASTWIND
10. HMNZS ENDEAVOUR

i. Title: Operation DEEP FREEZE 61, 1961-1962 Marine Geophysical Investigations.

ii. TR-105

U. S. Navy Hydrographic Office
OPERATION DEEP FREEZE 61, 1960-1961
MARINE GEOPHYSICAL INVESTIGATIONS,
June 1962. 217 p., including 81 figs., 2
tables. (TR-105).

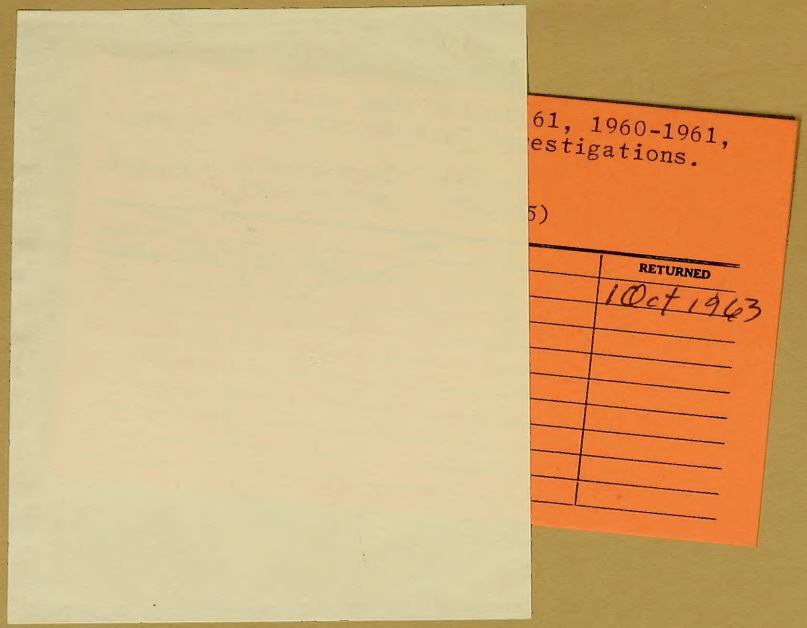
Contains results of the Marine Geophysical Investigations in the Antarctic and adjacent waters. Data on the thermal structure, salinity, density, dissolved oxygen, field analysis of bottom sediment, ice distribution, bathymetry across the South Sandwich Trench, and geomagnetic measurements are presented. A discussion of the Antarctic Convergence is also included.

Appendix A contains a tabulation of oceanographic data for 94 stations and Appendix B, the field analysis of 71 bottom sediment samples.

1. Antarctic - oceanography
2. Antarctic - bottom sediments
3. Antarctic - ice
4. Antarctic - geomagnetics
5. Antarctic - bathymetry
6. USS STATEN ISLAND
7. USS EDISTO
8. USS GLACIER
9. USCGC EASTWIND
10. HMNZS ENDEAVOUR

i. Title: Operation DEEP FREEZE 61, 1961-1962 Marine Geophysical Investigations.

ii. TR-105


61, 1960-1961,
estigations.
5)
RETURNED
10 Oct 1963